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Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                Database :
                                                                                                                                                                                                                                                                                Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                          Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                             Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Perfect score:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         protein search, using sw model
                                                                                                    A_Geneseq_23Sep04:*
1: geneseqp1980s:*
2: geneseqp1990s:*
3: geneseqp2000s:*
                                                                                                                                                                                                                                                                                                                                                                                                                                               BLOSUM62
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160.625 Million cell updates/sec
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GenCore version 5.1.6
Copyright (c) 1993 - 2004 Compugen Ltd.
geneseqp2001s:*
geneseqp2002s:*
geneseqp2003as:*
geneseqp2003bs:*
geneseqp2004s:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	יוה פי	Length	3 B	ID	7 I C
N	155		30	N	6324	3247
į,	155	100.0	30	N	80	ω
4	155		30	N	054	0548 F
ហ	155		30	N	AAR69063	3 Amida
o	155	٥.	30	N		5 GLP1(7-
7	155		30	N	895	r98956 Target p
ထ	155		30	N	œ	0
φ	155		30	N	AAW63182	N
10	155		30	N	œ	8 Glucagon
11	155		30	N	AAW50906	ማ
12	155		30	N	AAY03719	Φ
13	155		30	N	AAY31503	Aay31503 Glucagon-
14	155		30	N	AAY34198	
15	155		30	N	97	Aay39773 Glucagon
16	155		30	N	AAY27374	
17	155		30	N	AAY42935	٠.
18	155	0	30	N	AAY22166	Aay22166 GLP-1-lik
19	155		30	N	ADI24916	GLP-
20	155		30	ω	134	Aab21340 GLP-1 pep
21	155		30	ω	SO.	Aay78949 Glucagon-
22	155		30	ω	AAB07313	Aab07313 Modified
23	155	٥.	30	ω	AAB07294	Aab07294 Modified
24	155	0	30	ω	AAB07314	4
25	155		30	W	AAY53280	

155 100.0 30 3 AAB211283 155 100.0 30 4 AAB21188 155 100.0 30 4 AAB2336 155 100.0 30 4 AAB2336 155 100.0 30 4 AAB3333 155 100.0 30 4 AAB3333 155 100.0 30 4 AAB3117 155 100.0 30 4 AAB3117 155 100.0 30 4 AAB31291 155 100.0 30 4 AAB3291 155 100.0 30 4 AAB3291 155 100.0 30 4 AAB3292 155 100.0 30 4 AAB36024 155 100.0 30 5 AAB360124 155 100.0 30 5 AAB1422 155 100.0 30 5 AAB1402 155 100.0 30 5 AAB1402 155 100.0 30 5 AAB360297 155 100.0 30 5 AAB360297 155 100.0 30 5 AAB360297		.44 U1	44	43	42	41	40	39	38	37	ω 6	35	34	ω u	32	31	30	29	28	27	26
	AAB11283 AAB11083 AAB311083 AAB311083 AAB36416 AAB36416 AAB36333 AAB31170 AAB31170 AAB311170 AAB31181 AAB	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
ע ט 4 4 4 4 4 4 4 4 4 4 10 10 10 10 10 10 10 10	3 AAB1108 4 AAB35416 4 AAB35236 4 AAG3303 4 AAG31181 4 AAB91170 4 AAB91181 4 AAB921181 4 AAB92291 4 AAB92291 4 AAB92291 4 AAB93429 4 AAB93429 4 AAB902260 4 AAB902260 5 AAB202260 5 ABR43001 5 ABR43001 5 ABR43001 5 ABR43001 5 ABR430097 5 ABG7114429 5 ABR43001	•	٠	•	•	•	•		•	•	•				•	•	•	•	•	00.	CC.
	AAB21108 AAB21108 AAB2336 AAG63336 AAG63333 AAU07375 AAB91170 AAB91181 AAB91181 AAB92181 AAB9222 AAB36429 AAB36429 AAB36429 AAB36429 AAB369260 AAB360	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	٥
AAB1108 AAB2108 AAB36416 AAB63336 AAG63303 AAU7375 AAB91181 AAB91181 AAB859129 AAB85922 AAB60249 AAB6097		տ	ហ	ഗ	σŧ	ហ	4.	4,	4.	4	4,	4	4	4.	4,	4.	4.	4	4	W	L
	Aab21108 Aab21108 Aab21108 Aab36416 Aab36466 Aag63303 Aag63303 Aab91187 Aab91187 Aab91187 Aab91087 Aab610289 Aab60289 Aab60289 Aab6022094 Ab6022094 Ab60124 Ab60124 Ab60129 Ab60129 Ab60129	ABG71254	ABB80097	AAE14422	ABR43001	AA022094	AAB60124	AAE09260	AAB36429	AAB60249	AAB85922	AAG70461	AAB83291	AAB91181	AAB91170	AAU07375	AAG63303	AAB82336	AAB36416	AAB21108	AABIIZ83

ALIGNMENTS

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RESULT 1
ARA454
ARA ARA4
AX ARA4
AX ARA4
AX Insu
DT 25-M
DT 27-J
XX Insu
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Query Match DB 2;
Best Local Similarity 100.0%; Score 155, DB 2;
Matches 30; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                         The sequence is that of a derivative of insulinotropin which has insulinotropic activity and is useful for enhancing insulin action in a mammal, partic. for treating Type II diabetes (claimed). It is partic. suited for delivery to a mammal by ionophoresis. (Updated on 25-MAR-2003 to correct PN field.)
                                                                                                                                                    Sequence 30 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Claim 3; Page 20; 32pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New derivs. of glucagon-like peptide 1 and insulinotropin - used for enhancing insulin action in a mammal, partic. by iontophoretic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 1994-007457/01.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               15-JUN-1992;
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Type II diabetes.
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27-JUN-1994
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (PFIZ ) PFIZER INC.
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(first entry)
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                                                                     Length 30;
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Indels

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Gaps

HAEGTFTSDVSSYLEGQAAXEFIAWLVKGR 30

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(tPIZ) PRIZER INC.

MAX (SCIO-) SCIOS INC.

MAX (SCIO-) PRICE SCIOS INC.

MAX (SCIO-) PROBLEM AS (SCIOS INC.

MAX (SCIOS INC.

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DECEMPAR
10 AAR63247 standard; peptide; 30 AA.
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AAR79809;
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                                                                                                                1000 RT 100 RT 1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 30; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                h 100.0%; Score 155; DB 2; Similarity 100.0%; Pred. No. 2.3e-15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
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(first entry)
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RESULT 4
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Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAR79809 is the glucagon like peptide GLP-1 (7-36)amide. When complexed to a divalent metal cation (pref. zinc) it can be used to treat type II (non-insulin dependent) diabetes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Glucagon like peptide; GLP-1 (7-36)amide; type II diabetes; non-insulin dependent; divalent metal cation; zinc.
                                                                                                                                                                                                                       glucagon like peptide; GLP-1.
                                                                                                                                                                                                                                                                             Human glucagon like peptide (GLP-1).
                                                                                                                                                                                                                                                                                                                                                        AAR80548;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 30 AA;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    New divalent metal complexes of glucagon-like peptide {\bf 1} - useful for treating type II diabetes.
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                                                                                                            13-JUN-1995.
                                                                                                                                              US5424286-A.
                                                                                                                                                                                 Homo sapiens.
                                                                                                                                                                                                                                                                                                                   28-FEB-1996 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                            AAR80548 standard; peptide; 30 AA.
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                                    24-MAY-1993;
                                                                      24-MAY-1993;
                                                                                                                                                                                                                                         Exendin-4; diabetes mellitus; hyperglycaemia; insulinotropic peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (ELIL ) LILLY & CO ELI.
(ENGJ/) ENG J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           100.0%; Score 155; DB 2; ilarity 100.0%; Pred. No. 2.3e-15; Conservative 0; Mismatches 0;
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                                      93US-00066480
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Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glucagon I thrombin;
The naturally occurring sequence of Glucagon Like Peptide 1 (GLP1) is AAR69072. It is a 36 AA peptide that has been recombinantly produced but without a mechanism for providing for the amidation of the C-terminal Arg residue. Amidated recombinant GLP1 (7-36)NH2 (AAR69063) was prepd. from a multicopy fusion protein contg. four copies of a modified truncated GLP peptide having AA residues 7-34 of the native polypeptide and the terminal AA residues A-F-A at residues 35-37 (GLP1 (7-34)-A-F-A) (AAR69064). The recombinant GLP1 (7-34)-A-F-A can be transpeptidated to
                                                                                                                                                       Transpeptidation of recombinant polypeptides - using endopeptidase such as trypsin or thrombin to modify C-terminal residue.
                                                                                                                                                                                                 WPI; 1995-075233/10.
                                                                                                                                                                                                                            Wagner FW,
                                                                                                                                                                                                                                                                                                             19-JUL-1994;
                                                                                                                                                                                                                                                                                                                                        02-FEB-1995.
                                                                                                                                                                                                                                                                                                                                                                                                             Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Amidated Glucagon like
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAR69063;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 30 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AR880548 is the human glucagon like peptide (GLP-1), to which the Heloderma horridum/suspectum exendin-3/-4 peptides are analogous. The exendin peptides are insulinotropic, and can therefore be used in the treatment of diabetes mellitus (types I or II), and for the prevention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Stimulating/inhibiting insulin release with exendin polypeptide(s) -treating diabetes mellitus and preventing hyperglycaemia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eng J;
                                                                                                                                                                                                                                                                                   20-JUL-1993;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  23-AUG-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25-MAR-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAR69063 standard; peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                hyperglycaemia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Disclosure; Col 5-6; 17pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 1995-262627/34.
                                                                                                                            Claim 33; Page 50; 69pp; English.
                                                                                                                                                                                                                                                       (BION-) BIONEBRASKA INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Like
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cleavage
                                                                                                                                                                                                                          Stout J,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Peptide;
                                                                                                                                                                                                                                                                                  93US-00095162
                                                                                                                                                                                                                                                                                                             94WO-US008125.
                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           100.0%;
                                                                                                                                                                                                                            Henriksen D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GLP; transpeptidation; endopeptidase; trypsin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       peptide 1 (GLP1) (7-36)-NH2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ω
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 155; DB 2;
Pred, No. 2.3e-15;
; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A
                                                                                                                                                                                                                            Partridge B,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                                                                          Manning
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                                                                                                                                                                                                                            S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             prevention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             õ.
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Matches Query Match

Local Similarity

100.0%; br

Score 155; DB 2; Pred. No. 2.3e-15;

Length 30;

Indels

0

Gaps

0

Sequence 30 AA;

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
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                         Amidated recombinant GLP1(7-36)-NH2 (AAR98975) may be prepd. from a recombinant multicopy fusion peptide by cleavage, transamidation and photochemical rearrangement. A DNA construct is formed by joining 4 copies of the coding sequence for GLP1(7-36)-Met (AAR98976) and a linker peptide including a thrombin cleavage site. Expression in E. coli, followed by thrombin and CNBr digestion yields GLP1(7-36)-Hse (AAR98977), which is subjected to transamidation and UV irradiation to yield GLP1(7-36)-HH2. The amidated peptide may also be produced via GLP1(7-35)-Met (AAR98978) using a transpeptidation reaction
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            yield the modified recombinant native GLP1 (7-36)-NH2 (AAR69063) as follows. Trypsin was used to cleave the peptide at the Lys-Ala bond in the presence of either Gly-Arg-NH2 or Gly-Arg-Gly addition units so that the cleavage of the Ala-Phe-Arg leaving unit is followed by the addition of Gly-Arg-NH2 or Gly-Arg-Gly to the core GLP1 (7-34) to yield either amidaced 7-36 GLP1-NH2 or GLP1 7-36 with a terminal Gly (AAR69065). (Updated on 25-MAR-2003 to correct PN field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 30 AA;
                                                                                                                                                                         Example 16; Page 69; 93pp; English.
                                                                                                                                                                                                                  Production of C-terminal alpha-carboxamidated and transpeptidation of recombinant multicopy
                                                                                                                                                                                                                                                              WPI; 1996-287185/29
                                                                                                                                                                                                                                                                                            Stout JS,
                                                                                                                                                                                                                                                                                                                                                   07-DEC-1994;
                                                                                                                                                                                                                                                                                                                                                                                 07-DEC-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                          WO9617941-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Modified-site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GLP1; C-amide; C-amidated peptide; alpha-carboxamide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GLP1 (7-35) -NH2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  03-DEC-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAR98975;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAR98975 standard; peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           recombinant
                                                                                                                                                                                                                                                                                                                         (BION-) BIONEBRASKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
                                                                                                                                                                                                                                                                                           Patridge BE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                     94US-00350528
                                                                                                                                                                                                                                                                                                                                                                                 95WO-US015799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note= "C-terminal amide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         100.0%; S
100.0%; F
1tive 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             fusion
                                                                                                                                                                                                                                                                                            Heriksen DB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 155; DB 2;
Pred. No. 2.3e-15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           transpeptidation.
                                                                                                                                                                                                                                                                                           Holmquist B,
                                                                                                                                                                                                                  peptide(s)
peptide(s)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                           Wagner FW;
                                                                                                                                                                                                                       or fusion
                                                                                                                                                                                                                                  by cleavage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
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BIONEBRASKA INC.
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100007 7
1008956
1008956 standard; peptide; 30 AA.
                                                                                                                                                          ਲਹਾਜ਼ਾ 8
ਅਜਨੂ383
- ਮਨੇW16383 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Holmquist B,
                                                                                              AAW16383;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                            uery Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 1996-287186/29.
©3ucagon-like peptide-1(7-36).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             growth hommone releasing factor; glucagon-like portide 1 parathyroid hormone; inclusion body; carbonic anhydrase.
                                             25-MAR-2003
201-OCT-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           15-JAN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAR98956;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  07-DEC-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -09-DEC-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A new method for the isolation and/or purification of a recombinant peoptide employs a fusion protein construct (FPC) comprising a carbonic anhydrase and a variable fused polypeptide containing a target peptide. The method comprises precipitating either the FPC or a fragment of the FPC including the carbonic anhydrase. An alternative method of producing the peptide comprises expressing the FPC as part of an inclusion body. The target peptides of the FPC are derived from growth hormone releasing factor (GRF), glucagon-like peptide 1 (GLP1) or parathyroid hormone (FTH). This sequence corresponds to amino acids 7-36 of GLP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   isolation and purificn of peptide(s) from fusion protein constructs which include a carbonic anhydrase and a variable fused polypeptide.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13-JUN-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  W09617942-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 58; Page 50; 67pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 30 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  marget peptide (GLP1(7-36)) used in fusion protein construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Fusion protein construct; isolation; purification;
                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                                                                              30;
                                                                                                                                                                                                                                                                                                                1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                            HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
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                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Stout JS,
Wagner FW;
                                                                      (revised)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  94US-00350530
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                95WO-US015800
                                                                                                                                                          peptide;
                                                                                                                                                                                                                                                                                                                                                              100.0%; Score 155; DB 2;
100.0%; Pred. No. 2.3e-15;
tive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Henriksen DB,
                                                                                                                                                             30
                                                                                                                                                             Ā
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Manning SD,
                                                                                                                                                                                                                                                                                                                                                                                                       Length 30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        De La Motte RS;
                                                                                                                                                                                                                                                                                                                                                              9
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RESULT 9
AAW63182
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glucagon-like peptide-1 (7-36) (AAW16383) comprises amino acid residues 7 -36 of rat glucagon-like peptide-1 (GLP-1) (see also AAW16384). It is naturally produced from GLP-1 in the intestine and to a lesser extent in the pancreas. GLP-1(7-36) has insulinotropic activity, being able to stimulate the synthesis and secretion of insulin from the pancreas. It can be produced by chemical synthesis or by proteolytic digestion of GLP-1 for use as an insulin secretagogue or for the treatment of type II diabetes mellitus. (Updated on 25-MAR-2003 to correct PF field.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26-JAN-1988;
01-JUN-1990;
05-SEP-1991;
                                                                                                                                                                                                                      Glucagon-like peptide-1; GLP-1; diabetes; lipophilic; tetradecanoyl; carboxynonadecanoyl; deoxycholoyl; choloyl; lithocholoyl.
                                                                                                                                                                                                                                                                                        GLP-1 (7-36).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Seguence 30 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glucagon-like peptide-1 fragment comprising amino acids 7-36 - useful for enhancing insulin production in pancreatic islet cells., especially for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Glucagon-like peptide-1(7-36); GLP-1 (7-36); insulin secretagogue; insulinotropic hormone; type II diabetes mellitus; therapy.
05-MAR-1998
                                            WO9808871-A1
                                                                                                       Key
Modified-site
                                                                                                                                                                           Homo sapiens.
                                                                                                                                                                                                                                                                                                                                16-SEP-1998
                                                                                                                                                                                                                                                                                                                                                                             AAW63182;
                                                                                                                                                                                                                                                                                                                                                                                                                AAW63182 standard; peptide; 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 1; Col 34; 37pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            treating type II diabetes mellitus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 1997-201513/18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Habener JF;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  05-MAY-1986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          23-NOV-1993;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25-MAR-1997
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (GEHO ) GEN HOSPITAL CORP.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 HAEGTFTSDVSSYLEGÇAAKEFIAWLVKGR 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                (first entry)
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91US-00756215.
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                                                                                                              Location/Qualifiers
                                                                                       /note= "optionally the C-terminal is in amide form'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 155; DB 2;
Pred. No. 2.3e-15;
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22-AUG-1997;

97WO-DK000340

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RESULT 10
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New derivatives of glucagon-like peptide-1 (GLP-1) and its fragments and their analogues are disclosed in which at least one amino acid residue of the parent peptide has a lipophilic substituent attached to it. The GLP-1 (fragment is preferably GLP-1(A-C)) where A is 1-7 and C is 35-45. The CC deexycholoyl, choloyl or lithocholoyl, and it is attached e.g. to the cepsilon-amino group of a Lys residue in the peptide. The present sequence represents a preferred parent GLP-1 fragment to which the lipophilic substituent is to be attached. GLP-1 and its analogues and fragments may be used in treatment of type 1 and type 2 diabetes. Prior art analogues exhibit a high clearance rate from the body, which linits their usefulness. The new lipophilically substituted compounds have a C protracted profile of action compared with known analogues, e.g. GLP-1(7-GC 37). (N.B. The present sequence is described by name in the patent sequence shown in Swiss-Prot entry P01275 using information given in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local S
Matches 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30-AUG-1996;
08-NOV-1996;
20-DEC-1996;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Glucagon-like peptide-1 derivatives which have lipophilic substituent exhibit protracted profiles of action relative to known glucagon-like peptide(s)-1 compounds and are useful in treatment of diabetes.
            05-NOV-1996;
30-OCT-1997;
                                                                                                                                                                                               Homo sapiens
                                                                                                                                                                                                                           GLP-1; glucagon-like peptide; obesity
                                                                                                                                                                                                                                                        Glucagon-like peptide-1 (7-36) amide.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 30 AA;
                                                                                                               WO9819698-A1
                                                                                                                                                       Modified-site
                                                                                                                                                                                                                                                                                      29-SEP-1998
                                                      04-NOV-1997;
                                                                                   14-MAY-1998
                                                                                                                                                                                                                                                                                                                                          AAW63288 standard; peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim 36; Page; 76pp; English.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (NOVO ) NOVO-NORDISK AS.
                                                                                                                                                                                                                                                                                                                                                                                                                                  1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                   (first entry)
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96DK-00001259.
96DK-00001470.
            96US-0030213P
97US-00961405
                                                      97WO-US020114.
                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100.0%;
                                                                                                                                         "C-terminal amide"
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Pred. No. 2.3e~15;
Mismatches 0;
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RESULT 11
AAW50906
ID AAW50
XX AAW50
XX DAW50
XX DAW50
XX IT-AU
XX Gluca
XX Gluca
XX Gluca
XX Gluca
XX Homo
XX
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Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               The patent describes a new method of reducing body weight which comprises administration of a composition comprising: (i) glucagon-like peptide-1 (GLP-1); (ii) a GLP-1 analogue; (iii) a GLP-1 derivative; (iv) an agonist of the GLP-1 receptor; (v) an agonist of the GLP-1 signal transduction cascade; (vi) a compound which stimulates synthesis of endogenous GLP-1; (vii) a compound that stimulates release of endogenous GLP-1; or (viii) a salt of a material described in (i) (vii). The method may be used for treatment of obseity. The present sequence, GLP-1 (-36) amide, represents a preferred GLP-1 compound which can be used in the method
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Glucagon-like peptide-1; GLP-1 (7-37); GLP-1 analogue; surgical trauma; stress; hormonal response; insulin resistance; catabolic reaction; huma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glucagon-like peptide-1 analogue SEQ ID NO:5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAW50906 standard; peptide; 30 AA
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21-AUG-1997;
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Modified-site
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                                                                                                                                                                       WPI; 1998-239722/21.
                                                                                                                                                                                                                                                                                   (ELIL ) LILLY & CO ELI
                                                                                                                                                                                                                                                                                                                                                                                                                                  26-AUG-1997;
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97US-00916991.
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Pred. No. 2.3e-15;
Mismatches 0;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           reaction; human;
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0,

Claim 1; Page 13; 42pp; English

Use of glucagon-like peptide-1 and analogues and their derivatives attenuate post-surgical catabolic changes, insulin resistance and hormonal responses to stress.

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The present sequence represents a glucagon-like peptide-1 (GLP-1) graphous, which is used in the methods of the invention. The methods are:

(GLP-1) for attenuating post-surgical catabolic changes and insulin graphous and insulin graphous and graphous and graphous and graphous and graphous and graphous and first analogue, a GLP-1 derivative, or a salt of this compound; (2) for graphous and insulin catabolic changes and hormonal responses to stress, comprising administering a compound which exerts insulino-tropic activity by interacting with the same receptor (or receptors) with which graphous and hormonal responses to stress, comprising administering a compound which exert in exerting their graphous which enhances insulin sensitivity by interacting with the same graphous which enhances insulin sensitivity. The processes and GLP-1 graphous which enhances insulin sensitivity. The processes are useful for improving recovery after surgery by preventing the catabolic graphinous administration, are not disadvantages, as the patient is smally hospitalised before surgery, and fluids are continuously smally hospitalised before surgery, and fluids are continuously smally before darking, before, during and after surgery
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Sequence 30 AA;
                                            30;
                                                     Similarity
              HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
                                          Conservative
                                                   100.0%;
                                          ٥.
                                                  Score 155; DB 2;
Pred. No. 2.3e-15;
                                          Mismatches
                                                              Length 30;
                                       0
                                        Gaps
                                       0;
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AAY03719 standard; peptide; 30 AA

AAY03719;

08-JUN-1999 (first entry)

Amino acid sequence of GLP-1.

Exendin; agonist; diabetes; disorder; plasma glucose; gastric; diagnostic; gastro-intestinal; radiological; generic; GLP-1.

Synthetic.

Modified-site Location/Qualifiers /note= "C-terminal amide"

W09907404-A1

18-FEB-1999

:06-AUG-1998; 98WO-US016387

08-AUG-1997; 97US-0055404P

(AMYL-) AMYLIN PHARM INC.

WPI; 1999-180403/15.

Beeley NRA,

Prickett KS;

New exendin agonists - useful in the treatment of Type I and II diabetes

Disclosure; Fig 4; 70pp; English.

The invention relates to exendin agonists which slow gastric emptying and lower plasma glucose levels. The peptides are of the formula Xaa1-Xaa2-Xaa3-Gly-Thr-Xaa4-Xaa5-Xaa6-Xaa7-Xaa8-Ser-Lys-Gln-Xaa9-Glu-Glu-- Glu-Ala-

밁 Š CC Val-Arg-Leu-Xaall- Xaall- Xaal3-Leu-Lys-Asn-Gly-Gly Xaal4-Ser-Ser-CC Gly-Ala- Xaalis-Xaal6- Xaal1- Xaal8-Z; wherein: Xaal is Phe, Arg or Tyr; CC Xaa2 is Ser, Gly, Ala, or Thr; Xaa3 is Asp or Glu; Xaa4 is Phe, Tyr, or CC mapthylalanine; Xaa5 is Thr or Ser; Xaa6 is Ser or Thr; Xaa3 is Leu, Ile, Tyr, or mapthylalanine; Xaa5 is Thr or Ser; Xaa6 is Ser or Thr; Xaa3 is Leu, Ile, CC gentylglycine, Val, or Met; Xaa10 is Phe, Tyr, or mapthylalanine; Xaa11 CC is Ile, Val, Leu, pentylglycine, tert-butylglycine, or Met; Xaa12 is Glu CC or Asp; Xaa13 is Trp, Phe, Tyr, or mapthylalanine; Xaa14, Xaa15, Xaa16, CC and Xaa17 are independently Pro, homoproline, JHyp, 4Hyp, thioproline, N-CC alkylglycine, N-alkylpentylglycine, or N-alkylalanine; Xaa18 is Ser, Thr, CC or Tyr; and Z is -OH or -NH2 with the proviso that the sequence is not the amino acid sequences shown in Axy03713 rnd Axy03718. The Specification claims for a second peptide of the above formula where Xaa1 is His, Arg, Tyr or 4-inidazopropionyl. The exendin agonists are used to CC treat Type I and II diabetes, disorders which would be benefited by agents useful in delaying and/or slowing gastric emptying. CC Delayed gastric emptying is a useful diagnostic aid in gastro-intestinal cradiological examinations. The present sequence represents the amino acid sequence of Gip-1 Query Match Matches Exendin; agonist; GLP-1; glucagon-like peptide; toxic hypervolemia; diuresis; renal plasma flow; glomerular filtration rate; pre-eclampsia; eclampsia of pregnancy; cardiac contractility; renal failure; diuretic; hypertension; urine flow. Glucagon-like peptide (GLP-1) sequence 08-NOV-1999 AAY31503; AAY31503 standard; peptide; 30 AA. Sequence 30 AA; sequence of GLP-1 Local 30, 1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30 Similarity HAEGTFTSDVSSYLEGQAAKEFTAWLVKGR 30 Conservative (first entry) failure; nephrotic syndrome; pulmonary edema; 100.0%; <u>.</u> Score 155; DB 2; Pred. No. 2.3e-15; Mismatches Length 30; Indels 0, cirrhosis; Gaps

0

WO9940788-A1 Modified-site Homo sapiens. Synthetic Location/Qualifiers /note= "C-terminal amide"

05-FEB-1999; 99WO-US002554

13-FEB-1998; 98US-0075122P

(AMYL-) AMYLIN PHARM INC.

Young AA, Vine W, Beeley NRA, Prickett K;

WPI; 1999-527332/44.

Increasing urine flow by administering peptides or peptide agonists.

Page 7; 94pp; English

The invention relates to new methods of increasing urine flow that

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pre

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AAX34198
AAX34198
AAX34198
AAX34198
AAC
AAX3
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AAX3
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AAX3
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AAX3418
AAX34198
AAX3419
AAX
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Best Local S
Matches 30
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens.
Synthetic.
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                                                                                                                                                                                                                                                                                                                                                      Knudsen LB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               27-FEB-1998;
27-FEB-1998;
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                                                                                                                                                                                                                                               WPI; 1999-540500/45.
                                                                      Claim 30; Page; 63pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                         (NOVO ) NOVO-NORDISK AS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          30;
                                                                                                                                            high alpha-helix
                                                                                                                                                                                                                                                                                                                         SE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glucagon-like peptide-1; human; type I diabetes; type II diabetes; y; therapy; mutein.
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                                                                                                                                            containing stabilized derivatives of glucagon-like peptide-1lpha-helix content, for treating diabetes and obesity.
                                                                                                                                                                                                                                                                                                                                                          Huusfeldt PO,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98DK-00000268.
98DK-00000272.
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                                                                                                                                                                                                                                                                                                                                                              Nielsen
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                                                                                                                                                                                                                                                                                                                                                              PF,
                                                                                                                                                                                                                                                                                                                                                              Kaarsholm NC,
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This sequence represents a mutant

ę,

the

human glucagon-like peptide-1

Query Match Best Local Similarity

100.0%;

Score 155; DB 2; Pred. No. 2.3e-15;

Length

Sequence

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ARYSO 13
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Matches 30
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Glucagon-like peptide-1; GLP-1; appetite suppression; human; diabetes; spontaneous food intake; therapy.
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                                                                                         This sequence represents a glucagon-like peptide-1 sequence used in the composition of the invention. The composition is for appetite suppression, and comprises a compound binding to a GLP-1 receptor and a pharmaceutical carrier. The composition can be administered to control appetite and/or reduce spontaneous food intake in humans, especially in
                                                                                                                                                                                                                                                                 Claim 5; Page 22; 35pp; English.
                                                                                                                                                                                                                                                                                                                                                  New composition for controlling
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                                                                                      appetite and/or reduce spontaneous
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GenCore version (c) 1993 - 2004

5.1.6 Compugen Ltd.

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Minimum
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US-08-055-162-1

US-08-470-220A-1

US-08-927-227-1

US-08-967-374-1

US-08-961-405A-5

US-08-961-405A-5

US-08-915-918A-5

US-08-915-918A-5

US-08-915-918A-4

US-09-333-415-4

US-09-355-181A-4

US-09-505-991-1

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US-08-470-263-3

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US-08-961-405A-1

US-08-961-405A-1

US-08-961-405A-1

US-08-961-405A-1

US-09-301-596-3

US-09-623-618B-17

US-09-623-618B-27

US-09-623-618B-27

US-09-623-618B-27

US-09-623-618B-27

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US-09-623-618B-28

US-09-623-618B-28
                                                                                                                                                   US-09-834-229A-5
PCT-US95-15800-2
ALIGNMENTS
                                                                            Sequence 5, A
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Sequence 3, A
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RESULT 1
US-08-066-480-6
; Sequence 6, Application US/08066480
; Patent No. 5424286
; Patent No. TAPRMATION:
                                                                                                                                                                                                                                 COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk
COMPUTER: IEM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PATENTIN Release #1.0, Version #1.
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/066,480
FILING DATE: 24-MAR-1993
CLASSIFICATION: 514
ATTORNEY/AGENT INFORMATION:
NAME: McDonnell, John J
REGISTRATION NUMBER: 26,949
REFERENCE/DOCKET NUMBER: 93,084
TELECOMUNICATION INFORMATION:
TELEFAX: 312-715-1000
TELEFAX: 312-715-1234
INFORMATION FOR SEQ ID NO: 6:
SEQUENCE CHARACTERISTICS:
LENGTH: 30 amino acids
TYPE: Type. Paper ide
                                                                                   US-08-066-480-6
                                                                                                      MOLECULE TYPE: peptide FEATURE: Peptide NAME/KEY: Peptide LOCATION: 1.30 OTHER INFORMATION: /II
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Eng, John
APPLICANT: Eng, John
TITLE OF INVENTION: Exendin-3 and Exendin-4 for Treatment of Diabetes Mellitus
TITLE OF INVENTION: Exendin-3 and Exendin-4 for Treatment of Diabetes Mellitus
NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS: Witcoff, Ltd.
STREET: 10 S. Wacker Drive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STREET: LV _
CITY: Chicago
CTATE: Illinois
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STATE: I
COUNTRY:
ZIP: 606
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                                                                                                          /label= GLP-1-7-36
/note= "GLP-1(7-36)
Score 155; DB 1;
Pred. No. 8.6e-16;
; Mismatches 0;
                                                                                                               fragment"
                                          Length 30;
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30;

Similarity

100.0%; ilarity 100.0%; Conservative 0;

Indels

0;

Gaps

HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30

HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30

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COMPUTER: IBM PC Compatible

COMPUTER: IBM PC Compatible

SYSTEM: PC-DOS/MS-DOS

SOFTWARE: PAtentIn Release #1.0, Version #1.25

CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/095,162

FILING DATE: 20-JUL-1993

FILING DATE: 20-JUL-1993

CLASSIFICATION: 514

ATTORNEY/AGENT INFORMATION:

NAME: Nelson, Albin J.

REGISTRATION NUMBER: 28,659

REFERENCE/DOCKET NUMBER: 8648.32-US01

TELEPHONE: 612-332-5300

TELEPHONE: 612-332-5300
                                                                                                                                GENERAL INFORMATION:
                                                                                                                                              Sequence 1, Application US/08470220A
                                                                                                                                                                                                                                                                                                                                                                                                                      MOLECULE TYPE: peptide
MIMBDIATE SOURCE:
CLONE: GLP1 7-36-NH2 (Glucagon-like Peptide)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         THEORMATION FOR SEQ ID NO: 1:
                           APPLICANT: Wagner, Fred W. APPLICANT: Stout, Jay
APPLICANT: Henriksen, Dennis
APPLICANT: Partridge, Bruce
APPLICANT: Manning, Shane
                                                                                                                                                                                     08-470-220A-1
                                                                                                                                                                                                                                                                                                                                                                         gery Match
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TITLE OF INVENTION: Recombinant Polypeptides
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE CHARACTERISTICS:
LENGTH: 30 amino acids
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APPLICANT:
TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ERAL INFORMATION:
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GY: linear
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3100 No. 5512459west Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           USA
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                                                                                                                                                                                                                                                                                                                                    Conservative
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Enzymatic Method for Modification Recombinant Polypeptides
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bruce
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                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                   Length 30;
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US-08-927-227-1
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; CLONE: GLP1 7-36-NH2 (Glucagon-like Peptide)
US-08-470-220A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 4
US-08-927-227-1
                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1, Application US/08927227A

Patent No. 5977071

GENERAL INFORMATION: APPLICANT: Galloway, James A.
APPLICANT: Hoffmann, James A.
APPLICANT: Hoffmann, James A.
TITLE OF INVENTION: GLUCAGON-LIKE INSULINOTROPIC PEPTIDE ANALGOGS,
TITLE OF INVENTION: COMPOSITIONS AND METHODS
FILE REFERENCE: X-9332B
CURRENT ADDITION: TOTAL COMPOSITIONS AND METHODS
CURRENT ADDITION:
Query Match 100.0%; Score 155; DB 2; Best Local Similarity 100.0%; Pred. No. 8.6e-16; Matches 30; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                              SOFTWARE: Patentin Ver. 2.0 SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match 100.0%;
Best Local Similarity 100.0%;
Matches 30; Conservative C
                                                                                                                                                                                                                                                                                                                        CURRENT APPLICATION NUMBER: US/08/927,227A
CURRENT FILING DATE: 1997-09-10
NUMBER OF SEQ ID NOS: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: US/08/470,220A
FILING DATE: 06-JUN-1995
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION UNMBER: US 08/095,162
FILING DATE: 20-JUL-1993
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEFAX: 612-332-9081 INFORMATION FOR SEQ ID NO: 1: SEQUENCE CHARACTERISTICS:
                                                                                                                 OTHER INFORMATION: The arginine residue at position 30 is modified so OTHER INFORMATION: as to replace the terminal carboxyl group with an OTHER INFORMATION: amine.
                                                                                                                                                                                   TYPE: PRT
ORGANISM: Homo sapiens
FEATURE:
                                                                                                                                                                                                                                                        ENGTH: 30
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MEDIUM TYPE: Floppy disk
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: BE PC COMPUTER: OPENATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME: Nelson, Albin J.
REGISTRATION NUMBER: 28,659
REFERENCE/DOCKET NUMBER: 86.
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MOLECULE TYPE:
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ADDRESSEE: Merchant & Gould
STREET: 3100 No. 5707826West Center
CITY: Minneapolis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TOPOLOGY:
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Pred. No. 8.6e-16;
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                                            DB 2; Length 30
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Gaps
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RESULT 5
US-08-967-374-1
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CLONE: GLP1 7-36-NH2 (Glucagon-like Peptide)
US-08-967-374-1
                                                                                                                                                                 US-09-348-136-1
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                 GENERAL INFORMATION:
APPLICANT: GAILOWAY, James A.
APPLICANT: Hoffmann, James A.
APPLICANT: Hoffmann, James A.
TITLE OF INVENTION: GLUCAGON-LIKE INSULINOTROPIC
TITLE OF INVENTION: COMPOSITIONS AND METHODS
                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
Matches 30; Conserv
                                                                                                                  Sequence 1, Application US/09348136 Patent No. 6133235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/520,485
FILING DATE: 29-MG-1995
ATTORNEY/AGENT INFORMATION:
NAME: Carter, Charles G.
REGISTRATION NUMBER: 35,093
REFERENCE/DOCKET NUMBER: 8648.32-USD1
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: 612-332-9081
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 30 amino acids
TYPE: amino acid
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FILE REFERENCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COUNTRY: USA
ZIP: 55402
ZIP: 55402
COMPUTER READMBLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
COMPUTER: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
ADDRESSEE: Merchant & Gould
STREET: 3100 No. 6037143west Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Manning, Shane
TITLE OF INVENTION: Enzymatic Method for Modification of
TITLE OF INVENTION: Recombinant Polypeptides
NUMBER OF SEQUENCES: 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STATE: MN
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CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TOPOLOGY:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: US/08/967,374
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                                                                                                                                                                                                                                                                                                                                  100.0%; Score 155; DB 3; llarity 100.0%; Pred. No. 8.6e-16; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       linear
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X-9332B
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                                        PEPTIDE ANALGOGS,
                                                                                                                                                                                                                                                                                                                                                                            Length 30;
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CURRENT APPLICATION NUMBER: US/09/348,136
CURRENT FILING DATE: 1999-07-06
PRIOR APPLICATION NUMBER: US 08/927,227
PRIOR FILING DATE: 1997-09-10
NUMBER OF SEQ ID NOS: 1
SOFTWARE: PatentIn Ver. 2.0
SEQ ID NO 1
LENGTH: 30
TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURE:
FEATURE:
OTHER INFORMATION: The arginine residue at position 30 is modified
OTHER INFORMATION: as to replace the terminal carboxyl group with a
OTHER INFORMATION: amine.
US-09-348-136-1
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                                                                                                                                                                                                             APPLICATION NUMBER: US/08/961,405A
FILING DATE: 30-OCT-1997
PRIOR APPLICATION DATA:
APPLICATION UNMBER: US 60/030,213
FILING DATE: 05-NOV-1996
ATTORNEY/AGENT INFORMATION:
NAME: MARTIN, Alice 0.
REGISTRATION NUMBER: 35,601
REFERENCE/DOCKET NUMBER: 3051/90264
TELEPHONE: 312-357-1313
TELEPAX: 312-759-5646
INFORMATION FOR SEQ ID NO: 5:
                                                                              US-08-961-405A-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 5, Application US/08961405A Patent No. 6191102 GENERAL INFORMATION:
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                  Query Match
Best Local
  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM FC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARB: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICANT: DiMarchi, Richard D. APPLICANT: Efendic, Suad TITLE OF INVENTION: USE OF GLP-1 TITLE OF INVENTION: ADMINISTERED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQUENCES:
                                                                                                                                                                           SEQUENCE CHARACTERISTICS:
LENGTH: 30 amino acids
                                                                                                 MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
                                                                                                                   TOPOLOGY:
                                                                                                                                                       TYPE: amino acid
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE:
                                                                                                                                    STRANDEDNESS:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ch 100.0%; Score 155; DB 3; Similarity 100.0%; Pred. No. 8.6e-16; 30; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 HAEGTFTSDVSSYLEGQAAKEFTAWLVKGR 30
  Similarity
30; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Chicago
: Illinois
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    E: BARNES & THORNBURG
200 W. Madison, Suite 2601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DiMarchi, Richard D.
100.0%; Score 155; DB 3; larity 100.0%; Pred. No. 8.6e-16; Conservative 0; Mismatches 0;
                                                                                                                      linear
                                                                                             peptide
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                                         Length 30;
          Indels
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TELEFAX: 312-321-4299
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
             URRENT APPLICATION NUMBER: US/09/302,596
URRENT FILING DATE: 1999-04-30
RUOR APPLICATION NUMBER: 60/103,498
RUOR PILING DATE: 1998-10-08
UNBER OF SEC ID NOS: 13
                                                                                                                  DEFLICANT: Coolidge, Thomas R.

PEPLICANT: Ehlers, Mario R.W.

THE OF INVENTION: Metabolic Intervention with GLP-1 to Improve the Function of

THE OF INVENTION: Ischemic and Reperfused Tissue

THE REFERENCE: P03660US1
                                                                                                                                                                                                                          NERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTORNEY/AGENT INFORMATION:
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/915,918A
FILLING DATE: 21-AUG-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                                                                                                                                       quence 4, Application US/09302596
                                                                                                                                                                                                                                                                                     -302-596-4
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FTWARE: Patentin Ver. 2.0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Efendic, Suad
TITLE OF INVENTION: USE OF GLP-1 OR ANALOGS IN TREATMENT OF
THILE OF INVENTION: MYOCARDIAL INFARCTION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8-915-918A-5
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             nence 5, Application US/08915918A
ent No. 6277819
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ry Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME: Martin, Alice C.
REGISTRATION NUMBER: 35,601
REFERENCE/DOCKET NUMBER: 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ADDRESSEE: BRINKS, HOFER, GILSON & LIONE STREET: NBC Tower - Suite 3600, 455 N. Cityfront STREET: Plaza Drive CITY: Chicago
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRANDEDNESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                 30;
                                                                                                                                                                                                                                                                                                                                                                                                 1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                   HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   30 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 155; DB 3; Pred. No. 8.6e-16;
                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 3; Length 30;
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; LENGTH: 30
; TYPE: PRT
; ORGANISM: mammalian
US-09-302-596-4
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Batent No. 6284727

GENERALI INFORMATTOW
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Best Local Similarity
                                                                                                                                                                                                                                              TELEFAX: (212)573-193:
TELEX: N/A
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION NUMBER: US/08/472
IMMEDIATE SOURCE:
LIBRARY: N/A
CLONE: N/A
                                                                                                                                     MOLECULE TYPE: I
HYPOTHETICAL: NO
ANTI-SENSE: NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE OF INVENTION: Prolonged Delivery of Peptides NUMBER OF SEQUENCES: 7
CORRESPONDENCE ADDRESS: ADDRESSE: Pfixe-
                                                                                              FRAGMENT TYPE: N-terminal ORIGINAL SOURCE: ORGANISM: N/A
                                                                                                                                                                                                      SEQUENCE CHARACTERISTICS:
LENGTH: 30 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ZIP: 10017-5755
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                          REFERENCE/DOCKET NUMBER: PC
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212)573-1189
TELEFAX: (212)573-1939
                                                                                                                                                                                                                                                                                                                                                      ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                    CLASSIFICATION: 514
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 1
FILING DATE:
                                         INDIVIDUAL ISOLATE: HAPLOTYPE: N/A CELL LINE: N/A
                                                                                   STRAIN: N/A
                                                                                                                                                                              STRANDEDNESS:
TOPOLOGY: lir
                                                                                                                                                                                                                                                                                                                            NAME: Sheyka, Robert F. REGISTRATION NUMBER: 31,304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CITY: New York
STATE: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COUNTRY:
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Y: U.S.A.
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235 East 42nd Street, 20th Floor
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                                                                                                                                                                              linear
                                                                                                                                               . peptide
NO
                                                                                                                                                                                         single
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                                                                      N/A
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少二 西京城縣衛書

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Sequence 4, Application US/09585181A
Patent No. 6358924
GENERAL INFORMATION: James
TITLE OF INVENTION: GLP-1 FORMULATIONS
FILE REFERENCE: X-11368
CURRENT APPLICATION NUMBER: US/09/585,181A
CURRENT FILING DATE: 2001-08-22
PRIOR APPLICATION NUMBER: US 60/067,600
PRIOR FILING DATE: 1997-12-05
NUMBER OF SEQ ID NOS: 5
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
APPLICANT: Holst, Jer
APPLICANT: Vilsboll,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOFTWARE:
SEQ ID NO 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 100.0%; Score 155; DB 3; Best Local Similarity 100.0%; Pred. No. 8.6e-16; Matches 30; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 4, Application US/09333415
Patent No. 6344180
                                                                                                                                                                                                        SOFTWARE: PatentIn
SEQ ID NO 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
Best Local Similarity Matches 30; Conserv
                               Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE OF INVENTION: GLP-1 as a Diagnostic Test to Determine Beta-Cell TITLE OF INVENTION: Function and the Presence of the Condition of IGT and TITLE OF INVENTION: Type-II Diabetes FILE REFERENCE: P03987US0 CURRENT FLICATION NUMBER: US/09/333,415 CURRENT FLING-DATE: 199-06-15 NUMBER OF SEQ ID NOS: 13
                                                                                               FEATURE:
NAME/KEY: MOD RES
LOCATION: (30)..(
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: PRT ORGANISM: Homo sapiens
                                                                                                                                               TYPE: PRT ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  POSITION IN GENOME:
CHROMOSOME/SEGMENT:
MAP POSITION: N/A
                                                                                  OTHER INFORMATION: AMIDATION
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                                                                                                                                                                                     ENGTH: 30
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30; Conserv
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              100.0%; Score 155; DB 3; 100.0%; Pred. No. 8.6e-16;
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Pred. No. 8.6e-16;
   Mismatches
                                 Length 30;
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   Indels
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                                                                                                                                                    ; NAME/KEY: MOD RES; LOCATION: (30)...(30)
; CIHER INFORMATION: The arginine residue at position 30 is modified; OTHER INFORMATION: the terminal carboxyl group with an amine. US-09-975-905-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; OTHER INFORMATION: synthetic construct US-09-209-799D-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-209-799D-10
밁
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION NUMBER: US/09/209,799D CURRENT FILING DATE: 1998-12-11 NUMBER OF SEQ ID NOS: 29 SOFTWARE: Patentin version 3.0 SEQ ID NO 10 LENGTH: 30 TYPE: PRT CREANISM: Artificial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local Similarity
Matches 30; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 10, Application US/09209799D Patent No. 6380357 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                              SOFTWARE: PatentIn version 3.1 SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 1, Application US/09975905
Patent No. 6388053
                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
                                                                                                               Query Match
                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION NUMBER: US/09/975,905
CURRENT FILING DATE: 2001-10-12
PRIOR APPLICATION NUMBER: 09/573,809
PRIOR FILING DATE: 2000-05-18
NUMBER OF SEQ ID NOS: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Narasimhan, Chakravarthy
TITLE OF INVENTION: GLUCAGON-LIKE PEPTIDE-1 CRYSTALS
FILE REFERENCE: X-10242
                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Galloway, John A
APPLICANT: Hoffmann, James A
TITLE OF INVENTION: Glucagon-Like Insulinotropic Peptides,
FILE REFERENCE: X-9332E
FILE REFERENCE: X-9332E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Hermeling, Ronald APPLICANT: Hoffmann, James
                                                                                                                                                                                                                                                                  TYPE: PRT
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 HAEGTFTSDVSSYLEGQAAKEFTAWLVKGR 30
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                    1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
                                                                          l Similarity
30; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    100.0%;
                                                                            100.0%; Score 155; DB 3; 100.0%; Pred. No. 8.6e-16; tive 0; Mismatches 0;
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Pred. No. 8.6e-16;
Mismatches 0;
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RESULT 15 US-09-505-991-1

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Search completed: December 20, 2004, 08:59:45
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MEDIUM TYPE: Floppy disk

COMPUTER: IBM PC Compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION NUMBER: US/09/505,991
FILING DATE: 17-Feb-2000
CLASSIFICATION NUMBER: US/09/505,991
FILING DATE: 17-Feb-2000
PRIOR APPLICATION NUMBER: 08/520,485
FILING DATE: -UNKnown>
PRIOR APPLICATION NUMBER: 08/520,485
AFTING DATE: -UNKnown>
AFTING DATE: -UNKnown>
AREGISTRATION NUMBER: 35,093
REFERENCE/DOCKET NUMBER: 35,093
REFERENCE/DOCKET NUMBER: 3648.32-USD1
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       equence 1, Application US/09505991
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ADDRESSE: Merchant & Gould
STREET: 3100 No. 6403361west Center
CITY: Minneapolis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Manning, Shane
TITLE OF INVENTION: Enzymatic Method for Modification of
Recombinant Polypeptides
NUMBER OF SEQUENCES: 26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Wagner,
                                                                                                                                                                                                                                                              1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
                                                                                                                                                                                                                                                                                                                                          h 100.0%; Score 155; DB 4; Length 30; Similarity 100.0%; Pred. No. 8.6e-16; 30; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                     HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
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Henriksen, Dennis
Partridge, Bruce
Manning, Shane
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Database
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Maximum Match 100%
Listing first 45 summaries
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Maximum DB seq length: 2000000000
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OM protein - protein search, using sw model
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                                                                                             December 20, 2004, 08:54:47; Search time 1036 Seconds (without alignments)
10.362 Million cell updates/sec
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155
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GenCore version 5.1.6 Copyright (c) 1993 - 2004 Compugen Ltd.
/ Cgn2_6/ptodata/1/pubpaa/US09A_PUBCOMB.pep:*
/ Cgn2_6/ptodata/1/pubpaa/US09B_PUBCOMB.pep:*
/ Cgn2_6/ptodata/1/pubpaa/US09C_PUBCOMB.pep:*
/ Cgn2_6/ptodata/1/pubpaa/US09C_PUBCOMB.pep:*
/ Cgn2_6/ptodata/1/pubpaa/US10A_PUBCOMB.pep:*
/ Cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
/ Cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
/ Cgn2_6/ptodata/1/pubpaa/US10D_PUBCOMB.pep:*
/ Cgn2_6/ptodata/1/pubpaa/US10_PUBCOMB.pep:*
/ Cgn2_6/ptodata/1/pubpaa/US10_NEW_PUB.pep:*
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/cgn2_6/ptodata/1/pubpaa/PCT_NEW_PUB.pep:*
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/cgn2_6/ptodata/1/pubpaa/US06_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US06_PUBCOMB.pep:*
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/cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep:*
/cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

													Result
13	12	11	10	9	ω	7	g	ហ	4,	w	Ν	٢	ult No.
155	155	155	155	155	155	155	155	155	155	155	155	155	Score
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30	30	30	30	30	30	30	30	30	30	30	30	30	% Query Match Length
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US-10-055-259-4	US-10-091-258-4	US-10-125-255-1	US-10-072-540A-4	US-09-997-792-10	US-09-834-229A-5	US-09-953-021B-4	US-09-982-978-4	US-09-859-804-4	US-09-805-507-4	US-09-858-880-2	US-09-851-738-4	US-09-209-799D-10	ID
Sequence 4, Appl	Segmence 4. Appl	۲	4, A	Sequence 10, App	ω ω	Sequence 4, Appli	Sequence 4, Appli	Sequence 4, Appli	Sequence 4, Appli	Sequence 2, Appli	Sequence 4, Appli	Sequence 10, Appl	Description

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duenc	משמחה ב	eguence 3.	equence 3,	equence 4,	equence 3,	quence 28	equence 27	ence 17	equence 2,	equence 1,	quence 3,	eguence 1,	equence 4, Appl	equence 1, Appl	equence 1, Appl	quence 5	equence 11, App	equence 25, App	equence 9, Appl	equence 1, Appl	equence 1, Appl	equence 1, Appl	equence 114, Ap	equence 1	equence 25, App	equence 4, Appl	equence 2, Appl	equence 48, App	equence 28, App	equence 3, Appl	equence 2, Appl

ALIGNMENTS

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RESULT 1
US-09-209-799D-10
Sequence 10, Application US/09209799D
Publication No. US20010014666A1
GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: Hermeling, Ronald
APPLICANT: Hermeling, Ronald
APPLICANT: Horneling, Ronald
APPLICANT: Horneling, Ronald
APPLICANT: Horneling, Ronald
APPLICANT: Horneling, Ronald
CHART THILLOWN GLUCAGON-LIKE PEPTIDE-1 CRYSTALS
FILE REFERENCE; X-10242
CURRENT APPLICATION NUMBER: US/09/209,799D
CURRENT APPLICATION SYNTHETIC CONSTRUCT
FEATURE:
CURRENT APPLICATION SYNTHETIC CONSTRUCT
CURRENT FILING DATE: 198-12-11
CURRENT STATURE:
CURRENT APPLICATION: SYNTHETIC CONSTRUCT
CURRENT STATURE:
CURRENT FILING DATE: US/09/209,799D
CURRENT INFORMATION: SYNTHETIC CONSTRUCT
US-09-209-799D-10

OUT TYPE: PRT
CURRENT APPLICATION US/09851738
FILE REFERENCE:
CURRENT APPLICANT: HORNAMION:
CURRENT STATURE CONSTRUCT
CURRENT STATURE CONSTRUC
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Sequence 2, Application US/09858880 Diblication No. US20020061838A1 CENERAL INFORMATION:
           PRIOR FILING DATE: 2001-05-18
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APPLICANT: Dormady, Daniel
APPLICANT: Dormady, Daniel
APPLICANT: Dormady, Daniel
APPLICATION: Peptide Pharmaceutical Formulations
APPLICATION NUMBER: US/09/858,880
APPLICATION NUMBER: US/09/858,880
APPLICATION NUMBER: US/09/205,377
ARIOR APPLICATION NUMBER: US/09/205,377
ARIOR APPLICATION NUMBER: US/09/205,377
APRIOR FILING DATE: 2000-05-17
APRIOR FILING DATE: 2000-05-19
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SERAL INFORMATION:
SERAL INFORMATION:
SPÉCANT: COOLIDGE, THOMAS R.
SPÉCANT: CHLERS, MARIO
LIDE OF INVENTION: TREATWENT OF ACUTE CORONARY SYNDROMS WITH GLP-1
SPÉS REFERENCE: 089187/0395
URRENT FILING DATE: 2001-03-14
STOR APPLICATION NUMBER: 09/859,804
                                                                                                                                                                                                       quence 4, Application US/09805507
                                                                                                                                                                                                                                                         9-805-507-4
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#858-880-2
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FTWARE: PatentIn Ver. 2.0
ID NO 4
ENGTH: 30
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RRENT APPLICATION NUMBER: US/09/851,738

RRENT FILING DATE: 2001-05-09
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IOR APPLICATION NUMBER: 09/302,596
IOR FILING DATE: 1999-04-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PE: PRT
GANISM: Artificial Sequence
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RESULT 6
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SOFTWARE: Pa
SEQ ID NO 4
LENGTH: 30
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LENGTH: 30
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                        APPLICANT: COOLIDGE, THOMAS R.
APPLICANT: EMIERS, MARIO
TITLE OF INVENTION: TREATMENT OF ACUTE CORONARY SYNDROME WITH GLP-1
FILE REFERENCE: 089187/0395
CURRENT APPLICATION NUMBER: US/09/982,978
CURRENT FILING DATE: 2001-10-22
PRIOR APPLICATION NUMBER: 09/859,804
PRIOR APPLICATION NUMBER: 09/859,804
PRIOR APPLICATION NUMBER: 60/205,239
PRIOR APPLICATION NUMBER: 60/205,239
PRIOR APPLICATION NUMBER: 60/205,239
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                                                                                                                                                                                                                                                                                                               Sequence 4, Application US/09982978 Patent No. US20020146405A1
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Best Local Similarity
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SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 4
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APPLICANT: EHLERS, MARIO
TITLE OF INVENTION: TREATMENT OF ACUTE CORONARY SYNDROME WITH GLP-1
FILE REFERENCE: 089187/0355
CURRENT APPLICATION NUMBER: US/09/859,804
CURRENT FILING DATE: 2001-05-18
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                                                               NUMBER OF SEQ ID NOS:
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PRIOR FILING DATE: 2000-05-19
NUMBER OF SEQ ID NOS: 13
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OTHER INFORMATION: Description of Unknown Organism: Mammalian GLP OTHER INFORMATION: peptide
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ORGANISM: Unknown Organism
PEATURE:
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                                         PatentIn Ver. 2.1
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; TYPE: PRT; ORGANISM: Homo sapiens US-09-953-0218-4
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                                                                                  ; OTHER INFORMATION: synthetic construct US-09-834-229A-5
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Patent No. US20020147131A1
GENERRAL INFORMATION:
APPLICANT: Coolidge, Thomas L.
APPLICANT: Coolidge, Thomas L.
TITLE OF INVENTION: Metabolic Intervention with GLP-1 to Improve the Function of Isch
TITLE OF INVENTION: Reperfused Skeletal Muscle Tissue
FILE REFERENCE: P03660US6
CURRENT APPLICATION NUMBER: US/09/953,021B
CURRENT FILING DATE: 2001-09-11
CURRENT FILING DATE: 2001-09-11
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Best Local S
Matches 30
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SEQ ID NO 4
LENGTH: 30
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                                                                                                                                                                                              PRIOR FILING DATE: 1997-08-21
PRIOR APPLICATION NUMBER: US 06/024,980
PRIOR FILING DATE: 1996-08-30
NUMBER OF SEQ ID NOS: 6
SOFTWARE: PatentIn version 3.1
SEQ ID NO 5
  Query Match 100.0%; Score 1.5; DB 10;
Best Local Similarity 100.0%; Pred. No. 2.2e-15;
Matches 30; Conservative 0; Mismatches 0;
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Best Local Similarity
                                                                                                                                                                                                                                                                                   APPLICAMI: Efendic, Suad
APPLICAMI: Efendic, Suad
TITLE OF INVENTION: USE OF GLP-1 OR ANALOGS IN TREATMENT OF MYOCARDIAL INFARCTION
FILE REFERENCE: X-10822A
CURRENT APPLICATION NUMBER: US/09/834,229A
CURRENT FILING DATE: 2001-04-12
PRIOR APPLICATION NUMBER: US 08/915,918
PRIOR FILING DATE: 1997-08-21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION NUMBER: 09/302,596
PRIOR FILING DATE: 1999-04-30
NUMBER OF SEQ ID NOS: 13
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                                                                                                                                          ORGANISM: Artificial Sequence
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                                                                                                                           FEATURE:
                                                                                                                                                                                    LENGTH:
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Publication No. US20020123466A1
GENERAL INFORMATION:
APPLICANT: HOSEmann, James
FITLE OF INVENTION: GLP-1 FORMULATIONS
FILE REFERENCE: X-11368A
CURRENT APPLICATION NUMBER: US/10/072,540A
CURRENT FILING DATE: 2002-02-08
PRIOR APPLICATION NUMBER: US 60/067,600
PRIOR TILING DATE: 199-12-05
NUMBER OF SEQ ID NOS: 5
SOFTWARE: PATENTIN OS: 5
SOFTWARE: PATENTIN OS: 5
LENGTH: 30
TYPE: PRT
RESULT 11
US-10-125-255-1
; Sequence 1, Ap
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; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-09-997-792-10
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US-09-997-792-10
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APPLICANT: Hermeling, Ronald
APPLICANT: Hoffmann, James
APPLICANT: Narasimhan, Chakravarthy
TITLE OF INVENTION: GLUCAGON-LIKE PEPTIDE-1 CRYSTALS
FILE REFERENCE: X-10242
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Publication No.
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Best Local Similarity
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CURRENT FILING DATE: 2001-11-30
NUMBER OF SEQ ID NOS: 29
                                                                                                                                                                                                                                                                             ORGANISM: Homo sapiens
FEATURE:
NAMB/KEY: MOD RES
LOCATION: (30)..(30)
OTHER INFORMATION: AMIDATION
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30; Conserv
    Application US/10125255
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100.0%; P
vative 0;
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Pred. No. 2.2e-15;
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Matches
                                                                            Sequence 4, Application US/10055259

ENERAL INFORMATION:

SPELICANT: Holst, Jens J.

APPLICANT: Vilsboll, Tina

APPLICANT: Vilsboll, Tina

APPLICANT: VILSboll, Tina

APPLICANT: OF INVENTION: GDP-1 AS A DIAGNOSTIC TEST TO DETERMINE Beta-CELL FUNCTION AND THE OF INVENTION: PRESENCE OF THE CONDITION OF IGT AND TYPE-II DIABETES
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APPLICANT: Hoffmann, James A
TITLE OF INVENTION: Glucagon-Like Insulinotropic Peptides, Compositions and Methods
FILE REFERENCE: X-9332E
CURRENT FILING DATE: 2002-04-17
PRIOR APPLICATION NUMBER: US/10/125,255
CURRENT FILING DATE: 2002-04-17
PRIOR APPLICATION NUMBER: 09/573,809
PRIOR PILING DATE: 2000-05-18
NUMBER OF SEQ ID NOS: 1
SEQ TURNE: Patentin version 3.1
CURRENT APPLICATION NUMBER: US/10/055,259
CURRENT FILING DATE: 2002-06-21
NUMBER OF SEQ ID NOS: 13
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GENERAL INFORMATION:
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APPLICANT: Hatbaway, David R
APPLICANT: Coolidge, Thomas R
APPLICE OF INVENTION: COMPOSITIONS AND METHODS FOR TREATING PERIPHERAL VASCULAR DISEASE
FILE OF REFERENCE: RGN-2
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LIDCANTION: (30)...(30)
LIDCANTION: The arginine residue at position 30 is modified so as to replace
OTHER INFORMATION: the terminal carboxyl group with an amine.
10-125-255-1
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UNDERNIT FILING DATE: 2002-03-05
UNDER OF SEQ ID NOS: 13
OFTWARE: PatentIn version 3.1
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0-091-258-4
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30; Conservative (
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US-10-097-230-3
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US-10-097-230-3
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US-10-265-345A-2
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                                                                                                                            Sequence 3, Application US/10097230
Publication No. US2030186436A1
GENERAL INFORMATION:
APPLICANT: Perfetti, Riccardo
APPLICANT: Hui, Hongxiang
TITLE OF INVENTION: Glucose-Dependent Insulin-Secreting Cells Transfected with
TITLE OF INVENTION: Sequence Encoding GLP-1
FILE REFERENCE: 81476-0249704
CURRENT APPLICATION NUMBER: US/10/097,230
CURRENT FILING DATE: 2002-03-12
NUMBER OF SEC ID NOS: 9
SOFTWARE: Patentin version 3.1
SEC ID NO 3
LENGTH: BBT
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                                       Query Match
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PRIOR FILING DATE: 2001-10-05
NUMBER OF SEQ ID NOS: 34
SOFTWARE: Patentin version 3.2
SEQ ID NO 2
     Matches
                       Best Local
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Best Local
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SEQ ID NO 4
LENGTH: 30
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APPLICANT: Whelan, James
APPLICANT: Whelan, James
APPLICANT: Clairmont, Kevin B.

TITLE OF INVENTION: Peptides Acting as Both GLP-1 Receptor Agonists and Glucagon
TITLE OF INVENTION: Receptor Antagonists and Their Pharmacological Methods of UNITED REFERENCE: MSB-7288
CURRENT APPLICATION NUMBER: US/10/265,345A
CURRENT FILING DATE: 2003-01-31
                                                                                            TYPE: PRT
ORGANISM: Homo sapiens
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ORGANISM: Homo sapiens
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     Conservative
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Conservative C
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                       100.0%;
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Pred. No. 2.2e-15;
D: Mismatches 0;
                   Score 155; DB 14;
Pred. No. 2.2e-15;
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Search completed: December 20, 2004, 09:18:21 Job time : 1038 secs

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Result
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Maximum Match 100%
Listing first 45 summaries
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Maximum DB seq length: 2000000000
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Perfect score:
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45	. 44	U	42	41	40	39	38	37	36	35	4	33	32	31	30
79	83	85	86	86	87	87	88	88	88	88	90	90	90	90	90
51.0	53.5	54.8	55.5	55.5	56.1	56.1	56.8	56.8	56.8	56.8	58.1	58.1	58.1	58.1	58.1
36	29	39	29	29	υ 9	29	29	29	29	29	69	29	29	29	29
مر	N	بر	N	_	ب	_	N	,	_	<u>ب</u>	مع	N	N	N	N
GCFI	S39018	HWGH3Z	A61135	GCFLE	HWGH4G	GCCB .	C60840	GCTTS	GCDK	A61583	GCDG69	A91741	A91742	C39258	A91740
glucagon-36 - spot	glucagon - bowfin	ı	•	glucagon - Europea	exendin-4 - Gila m	glucagon - Chinchi	н	glucagon - slider	glucagon - duck	glucagon - ostrich	glucagon-69 - dog	glucagon - rabbit	glucagon - Arabian	glucagon - common	glucagon - turkey

ALIGNMENTS

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E-33-61/Broduct discarda #atatis experimental (GON)	. ,
F.13-69/Droding	
F:1-30/Region: glicentin-related pentide #status experimental	
F;1-69/Product: glucagon-69 #status experimental <g69></g69>	cacon 1 precurs
C; Keywords: amidated carboxyl end; carbohydrate metabolism; duplication; normone; incesc	lcagon G2 - Nort
C)Superramity: giucagon	
C) Comment: A. S. represent missing amino actos, mostry pasts, that are predicted to exist	
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A. Dosidios 111-160 VEHY.	Cagon -1 the peat
3.MO Decide time a system	Cappel TT proper
A:Accession: A28064	
A;Reference number: A28064; MUID:88243712; PMID:3379036	
A; Title: Naturally occurring products of proglucagon 111-160 in the porcine and human sm	
	cagon I precurs
R; Suni, T.; Thim, L.; KOIOG, H.; OTBKOV, C.; Harring, H.; HOISC, U.U.	
A; Residues: 76-107 CORON	٨
A; morecute type: protein	
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A: Residines: 33-61 ARROY	
A: Molecule type: protein	
A;Accession: A91781	
A;Reference number: A91781	
A;Title: The amino acid sequence of glucagon. V. Location of amide groups, acid degradat:	cagon precursor
J. Am. Chem. Soc. 79, 2807-2810, 1957	
Risromer, W.W.; Sinn, L.G.; Benzens, O.K.	cagon precursor
A; NOTE: this peptide is co-secreted with glucagon from the pantiteds	
A) Versignes: 1-30 Alba in the control of the contr	scription
A; MOLECILE TYPE: PROCEIN	•
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Allite: Ellial Aptrocente of a bossible bolerine brogheredon fragment.	
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k) Thim, L., Moody, A.J.	eing printed,
A/Resiques: 1-69 <this< td=""><td>o nave a</td></this<>	o nave a
A; Molecule Type: protein	
A;Accession: A01540	
A; Reference number: A94233; MUID: 81248172; PMID: 6894800	
A; Title: The primary structure of porcine glicentin (proglucagon).	
Regul. Pept. 2, 139-150, 1981	
R;Thim, L.; Moody, A.J.	
C;Accession: A01540; A60312; A91781; B32614; A28064	
C;Date: 17-Dec-1982 #sequence revision 31-Mar-1993 #text_change 20-Mar-1998	
C. Species: Sus scrofa domestica (domestic pig)	
N'ALTERDATE DAMES: GLICENTIN; OXYNTOMOGULLIN N'CONTENTS: GliCENTIN; OXYNTOMOGULLIN N'CONTENTS: GLICENTIN; OXYNTOMOGULLIN	
glucagon precursor - pig (fragment)	
GCPG	
RESULT 1	

] | 126-158/Product: glucagon-like peptide 2 #status experimental <GL2> | 107/Modified site: amidated carboxyl end (Arg) (amide in mature form from following

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Superfamily: glucagon
Superfamily: glucagon
Reywords: amidated carboxyl end; carbohydrate metabolism; duplication; hormone; pancre
Reywords: amidated carboxyl end; carbohydrate metabolism; duplication; hormone; pancre
Reywords: amidated carboxyl end; predicted <FGC>
Reywords: signal sequence #status predicted <FGC>
Region: glicentin-related peptide #status predicted
Region: glicentin-related peptide 1 #status experimental <GCN>
Region: glucagon #status experimental <GCN>
Region: glucagon-like peptide 1 #status experimental <GL1>
Region-like peptide 2 #status predicted <GL2>
Region: glucagon-like peptide 2 #status predicted <GL2>
Region: glucagon #status predicted <G
                                                                                                                                                                                                                                                                                                                                        102, 716-718, 1983
Tipe: Hamster preproglicagon contains the sequence of glucagon and two related peptid
Security number: A01539; MUID:83167563; PMID:6835407
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Biol. Chem. 246, 2822-2827, 1971
Lie: Amino acid sequence of bovine glucagon.
Scenace number: A92081; MUID:71166445; PMID:50ession: A92081
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Obez, L.C.; Frazier, M.L.; Su, C.J.; Kumar, A.; Saunders, G.F.
Watl. Acad. Sci. U.S.A. 80, 5485-5489; 193.
Gerence number: A93970; MUID:83299996; PMID:6577439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cagon precursor - bovine
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1990/Product: proglucagon #status predicted <PGC>
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sidues: 1-180 <LOP>
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                                                                                                                                                                 erfamily: glucagon
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                                                                                                                 words: amidated carboxyl end; carbohydrate metabolism;
                                                                                                                                                                                                                                                                                        ecule type: mRNA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       glicentin-related peptide; glucagon; glucagon-like peptide 1; glucagon-like
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                                                                                                                                                                                                                                                                                                                               A01539
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Santerre, R.F.; Mullenbach, G.T.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
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Pred. No. 7.1e-15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 155; Db 1,
Pred. No. 6.2e-15;
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A;Accession: Accession: Accession: Accession: A;Accession: A;Molecule type: protein
A;Residues: 53-81 <CON
A;Rote: glucagon-37 was not completely sequenced
C;Superfamily: glucagon
C;Keywords: amidated carboxyl end; carbohydrate metabolism; duplication; hormone;
F;1-20/Domain: signal sequence #status predicted <GGC>
F;21-180/Product: proglucagon #status predicted <FGC>
F;21-180/Product: glucagon-37 (oxyntomodulin) #status experimental <G37>
F;33-81/Product: glucagon-like peptide 1 #status predicted <GL1>
F;98-127/Product: glucagon-like peptide 2 #status predicted <GL1>
F;146-178/Product: glucagon-like peptide 2 #status predicted <GL1>
F;146-178/Product: glucagon-like peptide 2 #status predicted <GL1>
F;146-178/Product: glucagon-like peptide 2 #status predicted <GL1>
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Regul. Pept. 11, 309-320, 1985
Regul. Pept. 13, 309-320, 1985
A;Title: Primary structure of glucagon and a partial sequence
* no ference number: A60323; MUID:86017849; PMID:4048553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Molecule type: protein A; Residues: 53-81 < HUA>
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A;Title: Guinea pig glucagon differs from other mammalian glucagons
A;Reference number: A23849; MUID:86165412; PMID:3956884
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A;Title: Mutations in the guinea pig preproglucagon gene
A;Reference number: A24856; MUID:86248118; PMID:3755107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Accession: A23849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: UNIPROT:P05110; DDBJ:D00014; GB:N00014; NID:g220288; PIDN:BAA000R;Huang, C.G.; Eng., J.; Pan, Y.C.E.; Hulmes, J.D.; Yalow, R.S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Residues: 1-180 <SEI>
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F;98-127/Product: glucagon-like peptide 1 #status predicted <GL1>
F;146-180/Product: glucagon-like peptide 2 #status predicted <GL2>
F;127/Modified site: amidated carboxyl end (Arg) (amide in mature form from following
                                                                                                                 Matches
                                                                                                                                                                          Query Match
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Species: Cavia porcellus (guinea pig)

;Date: 30-Sep-1987 #sequence revision 31-Dec-1992 #text_change 09-Jul-2004

;Accession: A24856; A23849; A60232

;Seino, S.; Welsh, M.; Bell, G.I.; Chan, S.J.; Steiner, D.F.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                             Local
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86
                                                     1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
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                                                                                                                                          Similarity
HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 127
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                                                                                                                                       100.0%; Score 155; DB 1; Length 180; 100.0%; Pred. No. 7.1e-15;
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C;Species: Homo sapiens (man)
C;Date: 24-Apr-1984 #sequence_revision 31-Mar-1993 #text_change 09-Jul-2004
C;Accession: A24377; A44197; A30875; A32614; A01541; S23309

glucagon precursor [validated] - human
N;Contains: glicentin; glicentin-related polypeptide (GRPP); glucagon; glucagon-like
ke peptide 1 (tGLP1)

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A; Cross -references: GDB:119265; OMIM:138030

A; Map position: 2d36-2d37

A; Introns: 31/2; 85/2; 131/2; 179/2

C; Superfamily: glucagon
C; Keywords: amidated carboxyl end; carbohydrate metabolism; duplication; hormone; i
F; 21-20 Domain: signal sequence #status predicted <SIC>
F; 21-180 / Product: glicantin -related polypeptide #status predicted <GRPP>
F; 21-89 / Product: glicantin -related polypeptide #status predicted <GRPP>
F; 33-89 / Product: glicantin -related polypeptide #status predicted <GRPP>
F; 53-81 / Product: glicantin -related polypeptide #status experimental <CNN>
F; 53-81 / Product: glicagon #status experimental <CNN>
F; 92-127 / Product: glicagon-like peptide 1 #status experimental <GLI>
F; 92-127 / Product: truncated glicagon-like peptide 1 #status experimental <GLI>
F; 98-127 / Product: truncated glicagon-like peptide 1 #status predicted <GII>
F; 127 / Modified site: amidated carboxyl end (Arg) (amide in mature form from followi
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Nucleic Acids Res. 14, 4719-4730, 1986
A;Title: Structure of the human glucagon gene.
A;Reference number: A24377; MUID:88259053; PMID:3725587
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A;Residues: 1-180 <DRUb
A;Residues: 1-180 <DRUb
A;Cross-references: GB:J04040; NID:g183269; PIDN:AAA52567.1; PID:g
A;Croskov, C.; Bersani, M.; Johnsen, A.H.; Hojrup, P.; Holst, J.J.
J. Biol. Chem. 264, 12826-12829, 1989
A;Title: Complete sequences of glucagon-like peptide-1 from human
A;Reference number: A92732; MUID:89327338; PMID:2753890
A;Accession: A32614
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A;Accession: A30875
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Nature 304, 368-371, 1983
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A;Accession: A01541
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A;Residues: 53-81 <THO>
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A;Residues: 98-127 <ORS>

R;Thomsen, J.; Kristiansen, K.; E

FEBS Lett. 21, 315-319, 1972

A;Title: The amino acid sequence
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;Residues: 1-179 <BEL>
;Cross-references: GB:V01515; NID:g31777;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ;Title: C-terminal sequencing of protein.;Reference number: S23188; MUID:92298996;;Accession: S23309
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                                                      Query Match
Best Local S
Matches 30
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;Comment: In pancreatic alpha-cells, proglucagon is processed to glicentin-related poly
tinal L cells, proglucagon is processed to truncated glucagon-like peptide 1, glucagon-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tsugita, A.; Takamoto, K.; Kamo, N. J. Biochem. 206, 691-696, 1992
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;Residues: 53-81 <TSU>
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                                                                                   Similarity
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63, 13475-13478, 1988
                                                                                   100.0%;
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18330860; PMID:2901414
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                                                                                   Score 155; DB 1
Pred. No. 7.1e-1
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                                                            Mismatches
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                                                                                                             Length 180;
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J.J.
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A;Cross-references: UNIPROT:PO6883; EMBL:K02809
A;Note: the authors translated the codon TTG for residue
R;M0jsov S; Heinrich, G; Wilson, I.B.; Ravazzola, M.;
J. Biol. Chem. 261, 11880-11889, 1986
A;Title: Preproglucagon gene expression in pancreas and 1
A;Reference number: A25190; MUID:86304324; PMID:3528148
A;Status: not compared with conceptual translation
A;Status: not compared with conceptual translation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   F;1-20/Domain: signal sequence #status predicted <SIG>
F;21-180/Product: proglucagon #status predicted <PGC>
F;21-50/Region: glicentin-related peptide #status predicted
F;33-81/Product: glucagon #status predicted <GCN>
F;98-127/Product: glucagon-like peptide 1 #status predicted <GL1>
F;146-180/Product: glucagon-like peptide 2 #status predicted <GL2>
F;127/Modified site: amidated carboxyl end (Arg) (amide in mature if
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Molecule type: mRNA
A;Residues: 1-180 <MOZ>
R;Residues: 1-180 <MOZ>
R;Heinrich, G.; Gros, P.; Lund, P.K.; Bentley, R.C.; Habener, J.
Endocrinology 115, 2176-2181, 1984
B;Title: Pre-proglucagon messenger ribonucleic acid: nucleotide
A;Reference number: A44198; MUID:85051023; PMID:6548696
A;Recession: A44198
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                                                                                                                                    glucagon precursor - degu
N;Contains: glicentin-related peptide;
C;Species: Octodon degus (degu)
C;Date: 31-Mar-1993 #sequence_revision
C;Accession: C36118
R;Nishi, M.; Steiner, D.F.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     C;Superfamily: glucagon carboxyl end; carbohydrate metabolism; duplication; hormone; pancre. F;1-20/Domain: signal sequence #status predicted 2076.
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A; Residues: 1-180 < HE:
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J. Biol. Chem. 259, 14082-14087, 1984
A;Title: Glucagon gene sequence: four of six exons encode
A;Reference number: A22655; MUID:85054853; PMID:6094539
                               A;Reference number: A36118; MUID:91155952; PMID:2293024
A;Accession: C36118
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: DNA
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A; Molecule type: mRNA
A; Residues: 1-180 <NI
                                                                                        Mol. Endocrinol. 4, 1192-1198, 1990
A; Title: Cloning of complementary Di
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ;Residues: 1-180 <HE2>;Cross-references: GB:K02809; GB:K02810; GB:K02811;
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Best Local :
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                                                                                                                                                                                                                                    glicentin-related peptide; glucagon; glucagon-like peptide 1; glucagon-like
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1-180 <NIS>
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Pred. No. 7.1e-15;
Pred. No. 7.1e-15;
                                                                                                                                                                                             31-Mar-1993 #text_change
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A;Cross-references: UNI C;Superfamily: glucagon

references: UNIPROT:P22890; GB:M57688;

NID:g202467; PIDN:AAA40588.1;

PID:g202468

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Molecule type: protein presidues: 55-83 <POL>
Residues: 55-83 <POL>
Buttang, J.; Eng, J.; Yalow, R.S.
Buttab. Res. 19, 542-544, 1987
Buttab. Res. 19, 542-544, 1987
Buttab. Res. 19, 542-544, 1987
Buttab. Chicken glucagon: sequence and potency in receptor assay.
Reference number: A60836, MUID:88113418; PMID:2828209
Reference number: A60836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Marches
Modecule type: protein
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(21.180/product: proglucagon #status predicted <PGC>
(22.50/Region: glicentin-related peptide #status predicted |
(50.81/product: glucagon #status predicted <GCN>
(50.81/product: glucagon-like peptide 1 #status predicted <GL1>
(50.81/27/product: glucagon-like peptide 2 #status predicted <GL1>
(50.81/product: glucagon-like peptide 2 #status predicted <GL2>
                                                                                                                                                                                                                                                                                        Dolliock, H.G.; Kimmel, J.R.
DBADI. Chem. 250, 9377-9380, 1975
Thithe: Chicken glucagon. Isolation and amino acid sequence studies
Reference number: A92189; MUID:76069271; PMID:1194290
                                                                                                                                                                                                                                                                ccession: A92189
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                                                                                                                                                                                                                                                                                                                                                                                   ©089÷references: UNIPROT:P01277; EMBL:Y07539; NID:g63749; PIDN:CAA68827.1; PID:g6375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ©Necule type: mRNA
Esidues: 1-180 <ROT>
ESIGNET references: UNIPROT:P55095; EMBL:Z46845; NID:g599880; PIDN:CAA86902.1; PID:g5998
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Meme: Processing of mouse proglucagon by recombinant prohormone convertase 1 and imm
Esperace number: A57294; MUID:95247722; PMID:7730317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              cagon precursor -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     nitains: glucagon; glucagon-like peptide 1
ecies: Gallus gallus (chicken)
tee: 31.Dec-1991 #sequence revision 31-Mar-1993 #text_change 09-Jul-2004
cession: S09992; A92189; A60836; A01542
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        puer 01-Dec-1995 #sequence_revision 01-Dec-1995 #text_change 09-Jul-2004
Scession: A57294; S49903
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              e: Nucleotide sequence determination of chicken glucagon precursor cDNA. Chicken exerce number: S09992; MUID:90249492; PMID:2338135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gawa, S.; Terazono, K.;
ett. 264, 117-120, 1990
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Pred No. 7.1e-1
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A;Molecule type: protein
A;Residues: 1-36 <PO2>
A;Accession: C28091
A;Molecule type: protein
A;Residues: 37-58 <POL>
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R;Pollock, H.G.; Hamilton, J.W.; Rouse, J.B.; Ebner K P. J. Biol. Chem. 263 0746-777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A,Title: Trout and chicken proglucagon: alternative splicing A,Reference number: A55895; MUID:95295739; PMID:7776976 A,Accession: I51301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   J. Biol. Chem. 263, 9746-9751, 1988
A;Title: Isolation of peptide hormones from the pancreas A;Reference number: A92730; MUID:88257102; PMID:3260236 A;Accession: B28091
                                                                                                                                                 C; Superfamily: glucagon
C; Keywords: carbohydrate metabolism; duplication; hormone; pancreas
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C;Superfamily: glucagon
C;Keywords: amidated carboxyl end; carbohydrate metabolism; duplication; hormone; p;1-22/Domain: signal sequence #status predicted <SIG>
F;13-151/Product: prodimeron #critical carbohydrate metabolism; duplication; hormone; p;23-151/Product: p
                                                                            F_{1}=36/Product: glucagon-36 (oxyntomodulin) #stat}
F_{1}=29/Product: glucagon #status predicted <GCN>
                                                                                                                                                                                                                                               A; Molecule type: protein A; Residues: 69-101 < PO3>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N;Contains: glucagon; glucagon-36 (oxyntomodulin); glucagon-like peptide 1; glucagon-lik C;Species: Rana catesbeiana (bullfrog)
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C;Species: Gallus gallus (chicken)
C;Date: 13-Sep_1996 #sequence_revision 13-Sep-1996 #text_change 09-Jul-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    P;55-83/Product: glucagon #status experimental <GCN> P;118-147/Product: glucagon-like peptide 1 #status predicted <GLl> P;147/Modified site: amidated carboxyl end (Arg) (amide in mature
F;69-101/Product: glucagon-like peptide 2 #status experimental <GL2>
                                                                                                                                                                                                                                                                                                                                A;Accession: D28091
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     N;Alternate names: oxyntomodulin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                glucagon precursor - bullfrog (fragments)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Cross-references: UNIPROT:P01277; GB:S78477; NID:g999386; PIDN:AAB34506.1; PID:g88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: mRNA
A; Residues: 1-206 < IRW >
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Status: preliminary; translated from GB/EMBL/DDBJ
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                                               ;37-67/Product: glucagon-like peptide 1 #status experimental <GLl>
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Best Local :
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     118 HAEGTYTSDITSYLEGQAAKEFIAWLVNGR 147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         118 HAEGTYTSDITSYLEGQAAKEFIAWLVNGR 147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   26;
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Pred. No. 4.4e-13;
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                                                                                                                       #status
                                                                                                                       experimental <G36>
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RESULT 14
GCAF2
glucagon 2 precursor - American goosefish
N;Contains: glucagon; glucagon-like peptide 1
C;Species: Lophius americanus (American goosefish)
C;Date: 31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change 09-Jul-2004
C;Accession: A05150
R;Lund, P.K.; Goodman, R.H.; Montminy, M.R.; Dee, P.C.; Habener, J.F.
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C;Keywords: amidated carboxyl end; duplication
F;1-30/Product: glucagon-like peptide #status experimental <GLP>
F;30/Modified site: amidated carboxyl end (Arg) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             glucagon-like peptide - American eel
C;Species: Anguilla rostrata (American eel)
C;Date: 10-Mar-1994 #sequence_revision 10-Mar-1994 #text_change 09-Jul-2004
C;Accession: B61125
R;Conlon, J.M.; Andrews, P.C.; Thim, L.; Moon, T.W.
Gen. Comp. Endocrinol. 82, 23-32, 1991
A;Title: The primary structure of glucagon-like peptide but not insulin has A;Reference number: A61125; MUID:91340068; PMID:1874385
A;Accession: B61125
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A;Title: The primary structure of glucagon-like peptide but not insulin has been conserv A;Reference number: A61125; MUID:91340068; PMID:1874385
A;Accession: C61125
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C;Species: Anguilla angui
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C61125
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Best Local S
Matches 23
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/Species: Anguilla anguilla (European eel)
/Date: 10-Mar-1994 #sequence_revision 10-Mar-1994 #text_change 09-Jul-2004
/Accession: C61125
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Best Local Similarity
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Similarity 76.7%;
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Pred. No. 1.6e-11;
4; Mismatches 3;
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Search completed: December 20, Job time: 39 secs

2004, 08:58:49

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A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-66 <IRW>
A;Residues: 1-66 <IRW>
A;Cross-references: UNIPROT:Q91409; EMBL:U19920; NID:g736366; PIDN:AAC59670.1; PID:g73636
C;Superfamily: glucagon
C;Keywords: duplication
                                                                                                                                                                                                                                                                                                                                       R.Irwin, D.M.; Wong, J.
Mol. Endocrinol. 9, 267-277, 1995
A.Title: Trout and chicken proglucagon: alternative splicing A.Reference number: A55895, MUID:95295739; PMID:7776976
A.Recession: I51093
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C;Superfamily: glucagon
C;Superfamily: glucagon
C;Keywords: carbohydrate metabolism; duplication; hormone; pancreas
F;1-21/Domain: signal sequence #status predicted <SIG>
F;1-21/Product: proglucagon 2 #status predicted <PGC2>
F;22-102/Product: glucagon #status predicted <GCN>
F;89-119/Product: glucagon-like peptide 1 #status predicted <GL1>
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A;Title: Anglerfish islet pre-proglucagon II. Nucleotide and corresponding amino acid sec A;Reference number: A05150; MUID:83135785; PMID:6338015
A;Accession: A05150
A;Molecule type: mRNA
A;Residues: 1-122 < LUN>
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    glucagon - chinook s
C;Species: Oncorhync
C;Date: 13-Sep-1996
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Oncorhynchus tschawytscha (chinook salmon)
-Sep-1996 #sequence_revision 13-Sep-1996 #text_change 09-Jul-2004
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                                      1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30
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HADGTYTSDVSTYLQDQAAKDFVSWLKSGR
                                                                                                 Conservative
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Pred. No. 5.3e-10;
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re greater than or equal to the score of the result being printed,
is derived by analysis of the total score distribution.
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GenCore version 5.1.6 (c) 1993 - 2004 Compugen Ltd.
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Q6DIZ4
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Q6RYB2
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GLUC_HELSU
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GLUC_RANCA
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GLUC_CHICK
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P15438 rana catesb
Q8uw19 hoplobatrac
P41521 anguilla an
Q6ryb2 bufo marinu
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Q6ryb7 ictalurus p
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P01272 b glucagon
P29794 c glucagon
P05110 c glucagon
P051275 h glucagon
P01273 m glucagon
P01278 m glucagon
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CARYAY AAS57647 AAS57658 GIU2_XENIA AAH54234 Q788W6 Q9140W6 Q9140W6 Q1U1_ONCMY Q6RYB6 AAS57649 Q6RYB6 AAS57648 ALSC7648 ALSC7648 GLUC_ICTPU GLUC_LEPSP

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Mammalia; Eutheria; C
Caprinae; Capra.
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Capra hircus (Goat).
Capra hircus (Goat).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
Caprinae; Capra.
NCBI_TaxID=9925;
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05-JUL-2004 (TrEMBLrel.
05-JUL-2004 (TrEMBLrel.
05-JUL-2004 (TrEMBLrel.
SEQUENCE FROM N.A.
Ballester M., Castello A., Ibanez E., Sanchez A., Folch J.W
Ballester M., Castello A., Ibanez E., Sanchez A., Folch J.W
"A rapid and accurate real-time quantitative PCR detection
determining transgene copy number in transgenic animals.";
Submitted (APR-2004) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
Ballester M., Castello A., Ibanez E., Sanchez Submitted (APR-2004) to the EMBL/GenBank/DDBJ EMBL; AY588290; AAT00451.1; -.
                                                                                                                                                                                                                                                                      Glucagon (Fragment).
Capra hircus (Goat).
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SMART; SM00070; GLUCA; 1.
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45 AA; 5179 MW; B538A926E9447F80 CRC64;
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Pred. No. 2.8e-14;
; Mismatches 0;
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databases.
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GLUCE BOVIN STANDARD; PRT; 180 AA.

AG: P01272;
DT 21-UUI-1936 (Rel. 01, Created)
DT 21-UUI-1936 (Rel. 05, Last sequence update)
DT 32-AUG-1987 (Rel. 05, Last annotation update)
DT 413-AUG-1987 (Rel. 05, Last annotation update)
DE Glucagon precursor (Contains: Glicentin; Glicentin-related polypeptide
DE Glucagon precursor (Coxt); Glucagon; Glucagon-like peptide 1
DE (GLP-1); Glucagon-like peptide 1(7-37)); Glucagon-like
DE (GLP-1); Glucagon-like peptide 1(7-37)); Glucagon-like
DE (GLP-1); Glucagon-like peptide 2(GLP-2)].

SN Name=GCG;
DS (GLP-1); Glucagon-like peptide 2 (GLP-2)].

SN Name=GCG;
DS (GLP-1); Glucagon-like peptide 2 (GLP-2)].

SN Name=GCG;
DS (GLP-1); Glucagon-like peptide 2 (GLP-2)].

SN NCBI TaxID=9913;
RM (L1)
RM (MEDIINE-8329996; PubMed-6577439;
RM (LDPCZ L.C., Frazier M.L., Su C.-J., Kumar A., Saunders G.F.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRINTS; PRO0275; GLUCAGON.

DR. SMART; SM00070; GLUCA, 3.

DR. PROSITE; PS00260; GLUCAGON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SO SEQUENCE
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01-OCT-2002 (TrEMBLrel.
01-OCT-2002 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        atches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Limesand S.W., Hay W.W. Jr.;
Submitted (JUL-2002) to the EMBL/GenBank
EMBL, AFS29185; AAM94409.1; -
GO, GO:0005576; C:extracellular; IEA.
GO; GO:0005179; F:hormone activity; IEA.
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SEQUENCE
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01-OCT-2002 (TrEMBLrel. 22,
01-MAR-2004 (TrEMBLrel. 26,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PROSITE; PS00260; GLUCAGON; 3.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 176 AA;
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ilarity 100.0%;
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Last annotation update)
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Pred. No. 1e-13;
Mismatches
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Pred. No. 2.8e-14;
; Mismatches 0;
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cc i- FUNCTION: Glucagon plays a key role in glucose metabolism and clicagon plays a key role in glucose metabolism and homeostasis. Regulates blood glucose by increasing gluconeogenesis and decreasing glycolysis. A counterregulatory hormone of insulin, relates plasma glucose levels in response to insulin-induced hypoglycemia (By similarity).

cc -i- FUNCTION: GLP-1 is a potent stimulator of glucose-dependent insulin release. Play important roles on gastric motility and the suppression of satiety and stimulation of glucose disposal in peripheral tissues, independent of the actions of insulin. Have growth-promoting activities on intestinal epithelium. May also regulate the hypothalamic pituitary axis (HPA) via effects on LH, TSH, CRH, oxytocin, and vasopressin secretion. Increases islet mass through stimulation of islet neogenesis and pancreatic beta cell proliferation (By similarity).

cl -i- FUNCTION: GLP-2 stimulates intestinal growth and up-regulates villus height in the small intestinal growth and up-regulates or the special target for GLP-2 action. Plays a key role in nutrient assimilation the sounce an anced in nutrient assimilation the principal target for GLP-2 action. Plays a key role in nutrient assimilation through enhanced.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kieffer T.J., Habener J.F.;
"The glucagon-like peptides.";
Endocr. Rev. 20:876-913(1999).
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Drucker D.J.;
"Glucagon-like peptide 2.";
Trends Endocrinol. Metab. 1
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                                                                                                                  -!- FUNCTION: Glicentin may modulate gastric acid secretion and
                                                                                                                                                           -!- FUNCTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     magnetic resonance.
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"Glucagon and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PubMed=12626323; DOI=10.1152/ajpendo.00492.2002; Jiang G., Zhang B.B.;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Staun W., Wider G., Lee K.H., Wuthrich K.;
'Conformation of glucagon in a lipid-water interphase by 1H nuclear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REVIEW
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Proc. Natl. Acad. Sci. U.S.A. 80:5485-5489(1983).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mol. Biol. 169:921-948(1503)
- FUNCTION: Glucagon plays a
gasiro-pyloro-duodenal activity.

SUBCELLULAR LOCATION: Secreted.

TISSUB SPECIFICITY: Glucagon is secreted in the A cells of the islets of Langerhans. GLP-1, GLP-2, oxyntomodulin and glicentin are secreted from enteroendocrine cells throughout the
                                                                                                                                                                          homeostasis, enhancing nutrient assimilation through enhanced gastrointestinal function, as well as increasing nutrient disposal. Stimulates intestinal glucose transport and decrease mucosal permeability (By similarity).
                                                                                                                                        similarity)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             pancreatic preproglucagon contains three glucagon-related
                                                                                                                                                           Oxyntomodulin significantly reduces food intake
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 10:153-156(1999)
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gastrointestinal tract.
INDUCTION: Glucagon release is stimulated by hypoglycemia inhibited by hyporglycemia, insulin, and somatostatin. GLP-2 are induced in response to nutrient ingestion (By

GLP-1

and

and

similarity).
PTM: Progluc

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Best Local S
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PDB; IXX6; NMR; A=53-81.
InterPro; IPR000532; Glucagon.
Pfam; PF00123; Hormone 2; 3.
PRINTS; PR00275; GLUCAGON.
                                                              TURN
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86
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                             Similarity
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HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR
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ilarity 100.
Conservative
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146
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74
75
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Amidation; Cleavage
                                                 AA;
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178
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                                                                                                                                                                                                                         Glucagon
                                                                         cleavage (by PCSK1)
Arginine amide (G-12)
group) (By similarit;
                                                                                                                                                                           Oxyntomodulin Glucagon.
By similarity.
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Glucagon-like
                                                                                                                     By similarity.

Glucagon-like peptide 2
Cleavage (by PCSK2) (By
Cleavage (by PCSK1 and I
                                                                                                                                                    Glucagon-like
                                                                                                                                                                                                similarity)
                                                                                                                                                                                                            Glicentin
                        Score 155; I
Pred. No. 1.1
); Mismatches
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 127
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                                                                          similarity)
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.1e-13;
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peptide 1(7-37) (By
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e; Signal.
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RESULT 5
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ID GLUC_CANFA

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PRT;

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A Rieffer T.J., Habener J.F.;

A Rieffer T.J., Habener J.F.;

IT "The glucagon-like peptides.";

IL Endoor. Rev. 20:876-931(1999).

IL Endoor. Rev. 20:876-931(1999).

Control of the peptides on the peptides of the peptides on the peptides of the peptides
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p1-APR-1993 (Rel. 25, Created)
29-MAR-2004 (Rel. 43, Last sequence update)
29-MAR-2004 (Rel. 44, Last sequence update)
05-UUL-2004 (Rel. 44, Last annotation update)
Glucagon precursor [Contains: Glicentin; Glicentin-related polypeptide (GRPP); Oxyntomodulin (OXY) (OXM); Glucagon-like peptide 1 (GLP-1); Glucagon-like peptide 1(7-37)); Glucagon-like peptide 1(7-36) (GLP-1(7-36)); Glucagon-like peptide 2 (GLP-2)].
Name=GCG;
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Drucker D.J.;
"Glucagon-like peptides: regulators
differentiation, and apoptosis.";
Mol. Endocrinol. 17:161-171(2003).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A. TISSUE=Pancreas, a Pubmed=11916259;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=89185675; PubMed=3238052; Shinomura Y., Eng J., Yalow R.S.; "Immunoreactive glucagons purified
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Mammalia; Eutheria;
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"Glucagon-like peptide
Trends Endocrinol. Meta
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PubMed=12626323; DOI=10.1152/ajpendo.00492.2002;
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Kieffer T.J., Ha
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regulation of glucose metabolism.";
l. 284:E671-E678(2003).
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Metab. 10:153-156(1999).
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Canis.
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collaboration

PTM: Projucagon is posttranslationally processed in a tissuespecific manner in pancreatic A cells and intestinal L cells. In
pancreatic A cells, the major bioactive hormone is glucagon
cleaved by PCSKZ/PC2. In the intestinal L cells PCSKI/PC1
liberates GLP-1, GLP-2, glicentin and oxyntomodulin. GLP-1 is
further N-terminally truncated by posttranslational processing in
the intestinal L cells resulting in GLP-1(7-37) GLP-1-(7-36) amide.
The C-terminal amidation is neither important for the metabolism
of GLP-1 nor for its effects on the endocrine pancreas (By

This

similarity).
SIMILARITY: Belongs to the glucagon family.

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crypt cell proliferation and decreased enterocyte apoptosis. The gastrointestinal tract, from the stomach to the colon is the principal target for GLP-2 action. Plays a key role in nutrient homeostasis, enhancing nutrient assimilation through enhanced gastrointestinal function, as well as increasing nutrient disposal. Stimulates intestinal glucose transport and decreases mucosal permeability (By similarity).

FINCTION: Oxyntomodulin significantly reduces food intake (By FINCTION: Oxyntomodulin significantly
FUNCTION: Glicentin may modulate gastric acid secretion and gastro-pyloro-duodenal activity.
SUBCEFAULAR LOCATION: Secreted.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          mass through stimulation of islet neogenesis and pancreatic beta cell proliferaton (By similarity).

FUNCTION: GIP-2 stimulates intestinal growth and up-regulates villus height in the small intestine, concomitant with increased
                                                                                                                                                                       similarity)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CRH, oxytocin, and vasopressin secretion. Increases islet
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are secreted from enteroendocrine cells throughout the gastrointestinal tract. GLP1 and GLP2 are also secreted in selected neurons in the brain.

INDUCTION: Glucagon release is stimulated by hypoglycemia and inhibited by hyperglycemia, insulin, and somatostatin. GLP-1: GLP-2 are induced in response to nutrient ingestion (By TISSUE SPECIFICITY: Glucagon is secreted in the A islets of Langerhans. GLP-1, GLP-2, oxyntomodulin cells of the and glicentin and

-1- PTM: Proglucagon is posttranslationally liberates GLP-1, GLP-2, glicentin and oxyntomodulin. GLP-1 is further N-terminally truncated by posttranslational processing in the intestinal L cells resulting in GLP-1(7-37) GLP-1-(7-36) amide. The C-terminal amidation is neither important for the metabolism PTM: Proglucagon is posttranslationally processed in a tissue-specific manner in pancreatic A cells and intestinal L cells. In pancreatic A cells, the major bloactive hormone is glucagon cleaved by PCSKZ/PC2. In the intestinal L cells PCSKI/PC1 of GLP-1 similarity). nor for its effects on the endocrine pancreas

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CC MASH
CC MAS Interpro; IPR000532; Glucagon.
Plam: PF00123; Hormone 2; 3.
PRINTS; PR00275; GLUCAGON. PRINTS; PR00275; GLUCA; EMBL; AF308439; AAL09425.1; EIR; A60318; GCDG69. HSSP; P01274; IGCN. SIGNAL : PROSITE; PS00260; GLUCAGON; 4. Amidation; Cleavage on pair of basic residues; 53 53 98 98 98 98 131 146 52 83 97 130 sequencing; Glucagon 20 89 50 Glicentin.
Glicentin.
Glicentin.related polypeptide (Esimilarity).
Oxyntomodulin (By similarity).
Glucagon (By similarity).
By similarity.
By similarity.
Glucagon-like peptide 1.
Glucagon-like peptide 1(7-37).
Glucagon-like peptide 1(7-36).
By similarity.
Glucagon-like peptide 2 (By simi Glucagon-like peptide 2 (By Simi Cleavage (by PCSK1).
Cleavage (by PCSK1).
Cleavage (by PCSK1).
Cleavage (by PCSK1). family; Hormone; Signal peptide 2 (By similarity),
PCSK2).
PCSK1 and PCSK2). νŒ)

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RESULT 6
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ID GLUC_CAV
AC P05110;
REAL AND SOLVE A
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Best Local :
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"Glucapon-like peptides: regulators of
differentiation, and apoptosis.";
Mol. Endocrinol. 17:161-171(2003).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Regul.
PubMed=10605628,
Kieffer T.J., Ha
                                                                                             Drucker D.J.;
"Glucagon-like peptide 2.";
Trends Endocrinol. Metab. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Primary structure of glucagon and a partial sequence (glucagon-37) from the guinea pig.";
Regul. Pept. 11:309-320/10061
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           05-JUL-2004 (Rel. 44, Last annotation update)
Glucagon precursor [Contains: Glicentin; Glicentin-related polypeptide (GRPP); Oxyntomodulin (OXY) (OXM); Glucagon, Glucagon-like peptide 1 (GLP-1); Glucagon-like peptide 1(7-37) (GLP-1(7-37)); Glucagon-like peptide 1(7-36)); Glucagon-like peptide 2 (GLP-2)].
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MOD_RES
                                                 REVIEW.
                                                                                                                                                                                                                                            "Glucagon and regulation of glucose metabolism."; Am. J. Physiol. 284:E671-E678(2003).
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                                                                                                                                                                                                                                                                                                                  PubMed=12626323; DOI=10.1152/ajpendo.00492.2002;
                                                                                                                                                                                                                                                                                                                                              REVIEW.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PubMed=12554744;
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MEDLINE=86017849; PubMed=4048553;
                                                                                                                                                                      PubMed=10322410;
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Seino S., Welsh M., Bell G.I., Chan S.J., Steiner D.F.;
"Mutations in the guinea pig preproglucagon gene are re
specific portion of the prohormone sequence.";
FEBS Lett. 203:25-30(1986).
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Mammalia; Eutheria;
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Eukaryota; Metazoa; Chordata;
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30; Conserv
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                                                                                                                                                                                                                                                                                        Zhang
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127
Habener J.F.;
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127
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Hystricognathi; Caviidae;
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Pred. No. 1.1e-13;
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"The glucagon-like peptides.";
Endocr. Rev. 20:876-913(1999).
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FUNCTION: GLP-1 is a potent stimulator of glucose-dependent insulin release. Play important roles on gastric motility and the suppression of plasma glucagon levels. May be involved in the suppression of satiety and stimulation of glucose disposal in peripheral tissues, independent of the actions of insulin. Have growth-promoting activities on intestinal epithelium. May also regulate the hypothalamic pituitary axis (HPA) via effects on LH, TSH, CXH, oxytocih, and vasopressin secretion. Increases islet mass through stimulation of silet neogenesis and pancreatic beta
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Amidation;
                                                                                                                                                                                                                                                                                          EMBL; D00014; BAA00010.1; PIR; A24856; GCGP.
                                                                                                                                                                                                                     Pfam; PF00123; Hormone_2; PRINTS; PR00275; GLUCAGON
                                                                                                                                                                                                                                                                           HSSP; P01275; 1D0R
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Pfam; PF00123;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cell proliferation (By similarity).

FUNCTION: GLP-2 stimulates intestinal growth and up-regulates villus height in the small intestine, concomitant with increase crypt cell proliferation and decreased enterocyte apoptosis. The gastrointestinal tract, from the stomach to the colon is the principal target for GLP-2 action. Plays a key role in nutrient homeostasis, enhancing nutrient assimilation through enhanced gastrointestinal function, as well as increasing nutrient disposal. Stimulates intestinal glucose transport and decreases mucosal permeability (By similarity).
                                                                                                                                                                                                                                                                                                                                             European Bioinformatics Institute. There are no restrict by non-profit institutions as long as its content is cliffied and this statement is not removed. Usage by and foilties requires a license agreement (See http://www.isb-sibsend an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FUNCTION: Glicentin may modulate gastric acid secretion and gastro-pyloro-duodenal activity (By similarity).
SUBCELLULAR LOCATION: Secreted.
INDUCTION: Glucagon release is stimulated by hypoglycemia and inhibited by hyperglycemia, insulin, and somatostatin. GLP-1 and GLP-2 are induced in response to nutrient ingestion (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               specific manner in pancreatic A cells and intestinal L cells. In pancreatic A cells, the major bloactive hormone is glucagon placed by PCSK2/PC2. In the intestinal L cells PCSK1/PC1 liberates GLP-1, GLP-2, glicentin and oxyntomodulin. GLP-1 is further N-terminally truncated by posttranslational processing in the intestinal L cells resulting in GLP-1(7-37) GLP-1-(7-36) amide. The C-terminal amidation is neither important for the metabolism of GLP-1 nor for its effects on the endocrine pancreas (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         mucosal permeability (By similarity). FUNCTION: Oxyntomodulin significantly reduces
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            similarity).
SIMILARITY: Belongs to the glucagon family.
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rotein sequencing; Glucagon f
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Glucagon-like pept:
Glucagon-like pept:
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family; Ho
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similarity)
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(5) SEQUENCE FROM W....
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TISSUE=Pancreas;
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101275;
21-JUL-1986 (Rel. 01, Created)
21-JUL-1986 (Rel. 43, Last sequence update)
29-MAR-2004 (Rel. 43, Last sequence update)
01-OCT-2004 (Rel. 45, Last annotation update)
Glucagon precursor [Contains: Glicentin; Glicentin-related polypepti
Glucagon precursor [Contains: Glicentin; Glicagon-like peptide 1
(GRPP); Oxyntomodulin (OXY) (OXM); Glucagon; Glucagon-like peptide 1
(GLP-1); Glucagon-like peptide 1(7-37) (GLP-1(7-37)); Glucagon-like
peptide 1(7-36) (GLP-1(7-36)); Glucagon-like peptide 2 (GLP-2)].
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                                                                                                                                                                                                                               "Cloning
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Bell G.I., Sanchez-Pescador R., Laybourn
"Exon duplication and divergence in the h
Nature 304:368-371(1983).
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Drucker D.J., Asa S.;
"Glucagon gene expression in vert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota; Metazoa;
Mammalia; Eutheria;
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"Structure of
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Koundinya M.,
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                    pubMed=12477932; DOI=10.1073/pnas.
Feingold E.A., Grouse L.H., Derge of the control of the 
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full-length
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Richards S., McDean P.J., McKernam K.J.

Richards S., Worley K.C., Hale S., Gai

Willalon D.K., Muzzy D.M., Sodergyen,
Fahey J., Halton E., Kettman M., Mada

Whiting M., Madan A., Young A.C., She
Bakteffield Y.S. M., Young A.C., She
Bakteffield Y.S. M., Young A.C., She
Bakteffield Y.S. M., Krzywinski M.I., g
Schmert A., Schein J.E., Jones S.J.M.

"Generation and initial analysis of me
and mouse cDNA sequences."

Proc. Natl. Acad. Sci. U.S.A. 99:18899

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RA Altechul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Altechul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Altechul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Hsieh F.,
RA Stapleton M., Jordan H., Morrer A.A., Rubin G.M., Hong L.,
Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA Bròwnstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
Bösak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
Rack Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
Willalon D.K., Muzny D.M., Sodergren E.J., Lu X., Glbbs R.A.,
Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
Willalon D.K., Muzny D.M., Sodergren E.J., Lu X., Glbbs R.A.,
Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
Butterfield Y.S.M., Kzzywinski M.I., Skalska U., Smailus D.E.,
"Generation and initial analysis of more than 15,000 full-length human
and mouse CDMA sequences."
                                                                                                                                                                                                                                                                                                                                               "Expression, purification, and PC1-mediated processing proglucagon, glicentin, and major proglucagon fragment. Purif. 28:15-24(2003).
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Blochemistry 42:2825-2835(2003).

C -!- FUNCTION: Glucagon plays a key role in glucose metabolism and conceostasis. Regulates blood glucose by increasing gluconeogenesis and decreasing glycolysis. A counterregulatory hormone of insulin, raises plasma glucose levels in response to insulin-induced hypoglycemia. Plays an important role in initiating and maintaining hyperglycemic conditions in diabetes.

C -!- FUNCTION: GLP-1 is a potent stimulator of glucose-dependent insulin release. Play important roles on gastric motility and the suppression of plasma glucagon levels. May be involved in the suppression of satiety and stimulation of glucose disposal in peripheral tissues, independent of the actions of insulin. Have growth-promoting activities on intestinal epithelium. May also regulate the hypothalamic pituitary axis (HPA) via effects on LH, TSH, CRH, oxytocin, and vasopressin secretion. Increases islet mass through stimulation of islet neogenesis and pancreatic beta cell proliferator. Inhibits beta cell apoptosis.

-!- FUNCTION: GLP-2 stimulates intestinal growth and up-regulates villus height in the small intestinal growth and up-regulates
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ying J., Ahn J.-M., Jacobsen N.E., Brown M.F., Hruby "NMR solution structure of the glucagon antagonist (Glu9)glucagon amide in the presence of perdeuterated
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Sturm N.S., Lin Y., Burley S.K., Krstenansky J.L., Ahn J.-
Azizeh B.Y., Trivedi D., Hruby V.J.;
"Structure-function studies on positions 17, 18, and 21 re
analogues of glucagon: the importance of charged residues
bridges in glucagon biological activity.";
J. Med. Chem. 41:2693-2700(1998).
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"NMR studies of the aggregation of glucagon-like peptide-1: formation
of a symmetric helical dimer.";
FEBS Lett. 515:165-170(2002).
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"The glucagon-like peptides.";
Endocr. Rev. 20:876-913(1999).
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crypt cell proliferation and decreased entercyte apoptosis. gastrointestinal tract, from the stomach to the colon is the principal target for GLP-2 action. Plays a key role in nutrie
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l. 284:E671-E678(2003).
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Plays a key role in nutrient
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SEQUENCE FROM N.A.
MEDLINE=83167563; PubMed=6835407;
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Glucagon precursor [Contains: Glicentin, Glicentin-related polypeptide (GRPP); Oxyntomodulin (OXY) (OXM); Glucagon; Glucagon-like peptide 1 (GLP-1); Glucagon-like peptide 1(7-37) (GLP-1(7-37)); Glucagon-like peptide 1(7-36)); Glucagon-like peptide 2 (GLP-2)].
Kieffer T.J., Habener J.F.;
"The glucagon-like peptides.";
"Theocor Rev. 20:876-913 (1999).
-i- FUNCTION: Glucagon plays a key role in chomeostasis. Regulates blood glucose by
                                                                                   PubMed=10322410;
Drucker D.J.;
"Glucagon-like peptide
Trends Endocrinol. Meta
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"Glucagon-like peptides: regulators
differentiation, and apoptosis.";
Mol. Endocrinol. 17:161-171(2003).
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Mesocricetus auratus (Golden hamster).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae
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                                                                                                                                                                                                                                                       PubMed=12554744;
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                                                                                                                                                                                                                                                                                                                                        related peptides
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insulin release. Play important roles on gastric motility and the suppression of plasma glucagon levels. May be involved in the suppression of satisty and stimulation of glucose disposal in peripheral tissues, independent of the actions of insulin. Have growth-promoting activities on intestinal epithelium. May also regulate the hypothalamic pituitary axis (HPA) via effects on LH, TSH, CRH, oxytocin, and vasopressin secretion. Increases islet mass through stimulation of islet neogenesis and pancreatic beta cell proliferation (By similarity).

-I. FUNCTION: GLP-2 stimulates intestinal growth and up-regulates villus height in the small intestine, concomitant with increased crypt cell proliferation and decreased entercyte apoptosis. The gastroinestinal tract, from the stomach to the colon is the gastrointestinal tract, from the stomach to the colon is the principal target for GLP-2 action. Plays a key role in nutrient beta gastrointestinal function, as well as increasing nutrient disposal. Stimulates intestinal glucose transport and decreases mucosal permeability (By similarity).
                                                                                                                                                                                     This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EWBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                          EMBL; J00059; AAA37074.1;
HSSP; P01275; 1DOR.
    Pfam; PF00123; Hormone
                                             InterPro; IPR000532;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        specific manner in pancreatic A cells and intestinal L cells. In pancreatic A cells, the major bioactive hormone is glucagon cleaved by PCSK2/PC2. In the intestinal L cells PCSK1/PC1 liberates GLP-1, GLP-2, glicentin and oxyntomodulin. GLP-1 is further N-terminally truncated by posttranslational processing in the intestinal L cells resulting in GLP-1(7-36) amide. The C-terminal amidation is neither important for the metabolism of GLP-1 nor for its effects on the endocrine pancreas (Bv similarity)
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FUNCTION: GLP-1 is a potent stimulator
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 INDUCTION: Glucagon release is stimulated by hypoglycemia and inhibited by hyperglycemia, insulin, and somatostatin. GLP-1 GLP-2 are induced in response to nutrient ingestion (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gastro-pyloro-duodenal activity SUBCELLULAR LOCATION: Secreted. INDUCTION: Glucagon release is:
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SIMILARITY:
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one_2; 3.
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Mis musculus (Mouse).

Ekkaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;

Bikaryota; Metazoa; Chordata; Sciurognathi; Miridae; Murinae; Muscock Mammalia; Eutheria; Sciurognathi; Miridae; Muscock Miridae; Mirid
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DE: (91-0CT-1996 (Rel. 34, Last sequence update)
DE: (91-0CT-1996 (Rel. 34, Last sequence update)
OF: 05-UTI-2004 (Rel. 44, Last annotation update)
DE: (91-2004 (Rel. 44, Last sequence update)
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similarity)
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RX MEDLINE=223857; Pubmed=12477932; DOI=10.1073/pnas.242603899;
RA Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA Klausner R.D., Collins F.S., Wagner L., Shemmen C.M., Schuler G.D.,
RA Klausner R.D., Collins F.S., Wagner L., Shemmen C.M., Schuler G.D.,
RA Klausner R.D., Collins F.S., Wagner L., Schaefer C.F., Bhat N.K.,
RA Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Hopkins R.F., Jordan H., Moore T., Max. S.I., Wang J., Hsieh F.,
RA Hopkins R.F., Jordan H., Moore T., Max. R.D., Hong L.,
RA Bisectin M.J., Wadin T.B., Toshiyuki S., Carninci P., Prange C.,
RA Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA Brownstein M.J., McKernan K.J., Malek J.A., Gunarathe P.H.,
RA Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA Raha S., McCrey R.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Richards S., Warley R.C., Malek J.A., Rodrigues S., Sanchez A.,
RA Fahey J., Helton E., Ketteman M., Madan A., Rodrigues S., Sanchez A.,
RA Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA Halesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
RA Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.,
Touch S., Jones S.J.M., Marra M.A.,
The Control of the Schein J.E., Jones S.J.M., Marra M.A.,
The Control of the Schein J.E., Jones S.J., Marra M.A.,
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The Control of the Schein J.E., Jones S.J., Marra M.A.,
The Control of the Schein J.E., Jones S.J., Marra M.A.,
The Control of the Schein J.E., Jones S.J., Marra M.A.,
                                                                                                                             PubMed=12626323; DOI=10.1152/ajpendo.00492.2002; Jiang G., Zhang B.B.; Giang B.B.; "Glucagon and regulation of glucose metabolism." Am. J. Physiol. 284:E671-E678 (2003).
                                                                                                                                                                                                                                                                                                                                                                                                           "Glucagon-like peptides: regulators differentiation, and apoptosis."; Mol. Endocrinol. 17:161-171(2003).
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Steiner D.F.;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PubMed=12554744;
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prohormone convertase 2 null m
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Pancreas 6:208-215(1991).
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PubMed=10322410
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Nature 420:563-573(2002).
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"Analysis of the mouse transcriptome based on functional annotation
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A., Webb G., Carroll R., Rav
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in principle. Since and a key role in glucose metabolism and homeostasis. Regulates blood glucose by increasing gluconeogenesis and decreasing glycolysis. A counterregulatory hormone of insulin, raises plasma glucose levels in response to insulin-induced hypoglycemia (By similarity).

FUNCTION: GLP-1 is a potent stimulator of glucose-dependent insulin release. Play important roles on gastric motility and the suppression of plasma glucagon levels. May be involved in the suppression of satiety and stimulation of glucose disposal in peripheral tissues, independent of the actions of insulin. Have growth-promoting activities on intestinal epithelium. May also regulate the hypothalamic pituitary axis (HPA) via effects on LH, TSH, CRH, oxytocin, and vasopressin secretion. Increases islet mass through stimulation of islet neogenesis and pancreatic beta cell proliferaton (By similarity).

-!- FUNCTION: GLP-2 stimulates intestinal growth and up-regulates villus height in the small intestine, concomitant with increased crypt cell proliferation and decreased enterocyte appoteois. The gastrointestinal tract, from the stomach to the colon is the principal target for GLP-2 action. Plays a key role in nutrient homeograsis.
                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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EMBL; Z46845; CAA86902.1; -.
EMBL; AF276754; AAX66898.1; -.
EMBL; AK007911; BAB25344.1; -.
EMBL; BC012975; AAH12975.1; -.
EMBL; BC7294; A57294.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gastro-pyloro-duodenal activity.

SUBCELLULAR LOCATION: Secreted.

FISSUE SPECIFICITY: Glucagon is secreted in the A cells of the islets of Langerhans. GLP-1, GLP-2, oxyntomodulin and glicentin are secreted from entercendocrine cells throughout the gastrointestinal tract. GLP1 and GLP2 are also secreted in selected neurons in the brain.

INDUCTION: Glucagon reclease is stimulated by hypoglycemia and inhibited by hyperglycemia, insulin, and somatostatin. GLP-1 and GLP-2 are induced in response to nutrient ingestion (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   similarity).
SIMILARITY: Belongs to the glucagon family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PTM: Proglucagon is posttranslationally processed in a tissue-specific manner in pancreatic A cells and intestinal L cells. In pancreatic A cells, the major bioactive hormone is glucagon cleaved by PCSKZ/PC2. In the intestinal L cells PCSKI/PC1 liberates GLP-1, GLP-2, glicentin and oxyntomodulin. GLP-1 is further N-terminally truncated by posttranslational processing in the intestinal L cells resulting in GLP-1(7-37) GLP-1-(7-36) amide. The C-terminal amidation is neither important for the metabolism of GLP-1 nor for its effects on the endocrine pancreas (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            homeostasis, enhancing nutrient assimilation through enhanced gastrointestinal function, as well as increasing nutrient disposal. Stimulates intestinal glucose transport and decreases mucosal permeability (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FUNCTION: Glicentin may modulate gastric acid secretion and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             similarity)
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Endocrinol. Meta
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Metab. 10:153-156(1999).
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MGI:95674; Gcg.

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01-AUG-1991 (Rel. 19, Last sequence update)
01-AUG-1991 (Rel. 19, Last sequence update)
05-JUL-2004 (Rel. 44, Last annotation update)
Glucagon precursor [Contains: Glicentin; Glicentin-related polypeptide (GRP); Oxyntomodulin (OXY) (OXM); Glucagon-like peptide 1 (GLP-1); Glucagon-like peptide 1 (GLP-1); Glucagon-like peptide 1 (7-36) (GLP-1(7-37)); Glucagon-like peptide 1 (7-36) (GLP-1(7-36)); Glucagon-like peptide 2 (GLP-2)].
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Pfam; PF00123; Hormone_2; 3.
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Mammalia; Eutheria;
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                                                                                                                                                                                             Kieffer T.J., Habener J.F.; "The glucagon-like peptides."; Endocr. Rev. 20:876-913(1999).
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                                                                                                                                                                                                                                                                                                                                                                                                                   Jiang G., Zhang B.B.; "Glucagon and regulat
                                                                                                                                                                                                                                                                                                                                                                                                                                                    PubMed=12626323; DOI=10.1152/ajpendo.00492.2002;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PubMed=12554744;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          insulin, and glucagon precursors from Octodon degus.";
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=91155952; PubMed=2293024; Nishi M., Steiner D.F.;
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                                                                                                                                                                                                                                                PubMed=10605628;
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OCT. Rev. 20:876-913(1999).

FUNCTION: Glucagon plays a key role in glucose metabolism and FUNCTION: Glucagon plays a key role in glucose metabolism and homeostasis. Regulates blood glucose by increasing gluconeogenesis and decreasing glycolysis. A counterregulatory hormone of insulin, raises plasma glucose levels in response to insulin-induced hypoglycemia (By similarity).

FUNCTION: GID-1 is a potent stimulator of glucose-dependent insulin release. Play important roles on gastric motility and the suppression of plasma glucagon levels. May be involved in the suppression of satiety and stimulation of glucose disposal in peripheral tissues, independent of the actions of insulin. Have growth-promoting activities on intestinal epithelium. May also
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OCTDE
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                                                                                                                                                                                                                                                                                                                                                                                                      regulation of glucose metabolism.";
l. 284:E671-E678(2003).
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Rodentia;
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Pred. No. 1.1e-13;
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New World rodent, the degu.
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FUNCTION: Glicentin may modulate gastric acid secretion and gastro-pyloro-duodenal activity (By similarity).

SUBCELILLAR LOCATION: Secreted.

TISSUE SPECIFICITY: Glucagon is secreted in the A cells of the islets of Langerhans. GLP-1, GLP-2, oxyntomodulin and glicentiare secreted from enteroendocrine cells throughout the gastrointestinal tract. GLP1 and GLP2 are also secreted in selected neurons in the brain.

INDUCTION: Glucagon release is stimulated by hypoglycemia and inhibited by hyperglycemia, insulin, and somatostatin. GLP-1 a GLP-2, are induced in response to nutrient ingestion (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                regulate the hypothalamic pituitary axis (HPA) via effects on LH, TSH, CRH, oxytocin, and vasopressin (By similarity). FUNCTION. GLP-2 stimulates intestinal growth and up-regulates villus height in the small intestine, concomitant with increased crypt cell proliferation and decreased enterocyte apoptosis. The gastrointestinal tract, from the stomach to the colon is the principal target for GLP-2 action. Plays a key role in nutrient homeostasis, enhancing nutrient assimilation through enhanced gastrointestinal function, as well as increasing nutrient
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           disposal. Stimulates intestinal glucose transport and decreases mucosal permeability (By similarity).
                                                                                                                                                                                                                                                                                                                                                             cells of the
                                                                                                                                                                                                                                                                                                                   glicentin
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specific manner in pancreatic A cells and intestinal L cells. In pancreatic A cells, the major bloactive hormone is glucagon cleaved by PCSKZ/PC2. In the intestinal L cells PCSKZ/PC1 liberates GLP-1, GLP-2, glicentin and oxyntomodulin. GLP-1 is further N-terminally truncated by posttranslational processing in the intestinal L cells resulting in GLP-1(7-37) GLP-1-(7-36) amide. The C-terminal amidation is neither important for the metabolism of GLP-1 nor for its effects on the endocrine pancreas (By similarity).

PTM: Proglucagon is posttranslationally processed in a tissue-

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KW: Amidation;
KW: Hormone; Si
FE SIGNAL
FI PEPTIDE
FI PEPTIDE
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                                                                                                                                                                                                                                                                       HSSP; P01275; 1DOR
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988
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81
89
128
                                                                                                                                                                                                                     on pair
                                                                                                                                                                                                                     of basic residues; Glucagon family;
similarity)
Cleavage (b)
Cleavage (b)
Cleavage (b)
Cleavage (b)
                                                          By similarity.
Glucagon-like p
Cleavage (by PC
                                                                                                similarity).
Glucagon-like peptide 1(7-36)
                                                                                                                By similarity.
Glucagon-like peptide 1 (By similarity).
Glucagon-like peptide 1(7-37) (By
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Glicentin-related polypeptide
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RESULT 11
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Bromer W.W., Sinn L.G., Behrens O.K.;

"The amino acid sequence of glucagon. V. Location of amide groups, acid degradation studies and summary of sequential evidence.";

J. Am. Chem. Soc. 79:2807-2810(1957).
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01-0CT-2004 (Rel. 45, Last annotation update)
Glucagon precursor [Contains: Glicentin; Glicentin-related polypeptide (GRPP); Oxyntomodulin (OXY) (OXM); Glucagon; Glucagon-like peptide 1 (GLP-1); Glucagon-like peptide 1(7-37); Glucagon-like peptide 1(7-36) (GLP-1(7-36)); Glucagon-like peptide 2 (GLP-2)].
                          Orskov C., Holst J.J., Nielsen O.V.;
                                                                                PubMed=3530719;
                                                                                                                                                                                         Buhl T., Thim L., Kofod H., Orskov C., Harling H., Holst J.J.; "Naturally occurring products of proglucagon 111-160 in the porcine and human small intestine.";
                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE OF 98-127.
MEDILINE-89327238; PubMed=2753890;
MEDILINE-89327238; PubMed=2753890;
MEDILINE-89327238; PubMed=2753890;
MEDILINE-893272389;
MEDILINE-89327289;
ME
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TISSUE-Pancreas, and Small intestine;
Siggers R.H., Goldade B.G., Laarveld B., Van Kessel A.G.
"Cloning of portine proglucagon.";
Submitted (FBB-2003) to the EMBL/GenBank/DDBJ databases
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21-JUL-1986 (Rel. 01,
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"Glucagon-like peptides GLP-1 and GLP-2, predicted products of the
                                                                                                                                                                                                                                                                          SEQUENCE OF 131-178.
MEDLINE=88243712; PubMed=3379036;
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Mammalia; Eutheria;
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                                                                                                           NISSUE SPECIFICITY.
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                                                                                                                                                                    Biol. Chem.
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                                                                                                                                                                    263:8621-8624(1988)
                                                                                                                                                                                                                                                                                                                                                              264:12826-12829(1989)
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                                                  Knuhtsen S., Baldissera F.G., Poulsen S.S.,
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688836160A9A3051 CRC64;
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a collaboration

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and decreasing glycolysis. A counterregulatory hormone of insulin, raises plasma glucose levels in response to insulin-induced hypoglycemia (By similarity).

-i- FUNCTION: GLP-1 is a potent stimulator of glucose-dependent insulin release. Play important roles on gastric motility and the suppression of plasma glucagon levels. May be involved in the suppression of satiety and stimulation of glucose disposal in peripheral tissues, independent of the actions of insulin. Have growth-promoting activities on intestinal epithelium. May also regulate the hypothalamic pituicary axis (HPA) via effects on LH, TSH, CRH, oxytocin, and vasppressin (By similarity).

-i- FUNCTION: GLP-2 stimulates intestinal growth and up-regulates villus height in the small intestine, concomitant with increased crypt cell proliferation and decreased entercoyte apptosis. The gastrointestinal tract, from the stomach to the colon is the principal target for GLP-2 action. Plays a key role in nutrient homeostasis, enhancing nutrient assimilation through enhanced disposal. Stimulates intestinal glucose transport and decreases mucosal permeability (By similarity).

-i- FUNCTION: Oxyntomodulin significantly reduces food intake (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                glucagon gene, are secreted separately from pig small intestine not pancreas."; Endocrinology 119:1467-1475(1986).
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MEDLINE=76051297; PubMed=171582;
Sasaki K., Dockerill S., Adamiak D.A., Tickle I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Kieffer T.J., Habener J.F.;
"The glucagon-like peptides.";
Endocr. Rev. 20:876-913(1999).
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"Glucagon-like
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"Glucagon and regulation of glucose metabolism.";
"Glucagon and 284:E671-E678(2003).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PubMed=10322410;
                                                         similarity).

Similarity).

FINCTION: Glicentin may modulate gastric acid secretion and gastro-pyloro-duodenal activity.

SUBCELLULAR LOCATION: Secreted.

FISSUE SPECIFICITY: Glucagon is secreted in the A cells of the islets of Langerhaus. GLP-1, GLP-2, oxyntomodulin and glicentin are secreted from entercendocrine cells throughout the gastrointestinal tract. GLP1 and GLP2 are also secreted in selected neurons in the brain.

INDUCTION: Glucagon release is stimulated by hypoglycemia and inhibited by hyperglycemia, insulin, and somatostatin. GLP-1 and GLP-2 are induced in response to nutrient ingestion (By
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FUNCTION: Glucagon plays a key role in glucose metabolism and homeostasis. Regulates blood glucose by increasing gluconeogenesis and decreasing glycolysis. A counterregulatory hormone of insulin,
    PTM: Proglucagon is posttranslationally processed in a tissue-specific manner in pancreatic A cells and intestinal L cells.
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Endocrinol. Meta
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Metab. 10:153~156(1999).
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Best Local (
GLUC RAT STANDARD; PRT; 180 AA.

P06883;

01-JAN-1988 (Rel. 06, Created)

01-JAN-1988 (Rel. 06, Last sequence update)

01-JAN-1988 (Rel. 44, Last annotation update)

GS-JUL-2004 (Rel. 44, Last annotation update)

Glucagon precursor [Contains: Glicentin; Glicentin-related polypeptide (GRPP); Oxyntomodulin (OXY) (OXM); Glucagon; Glucagon-like peptide 1 (GLP-1); Glucagon-like peptide 1 (GLP-1); Glucagon-like peptide 1 (GLP-1); Glucagon-like peptide 2 (GLP-2)].
                                                                                                                                                                                                                                                                                                                                                                                                                                    CONFLICT
SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
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Pfam; PF00123; hormone2; 3.
PRINTS; PR00275; GLUCAGON.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MISCELLANEOUS: GLP-2 does not have cleavage on a pair of basic residues at C-terminus as in other mammmals.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                pancreatic A cells, the major bloactive hormone is glucagon cleaved by PCSK2/PC2. In the intestinal L cells PCSK1/PC1 liberates GLP-1, GLP-2 glicentin and oxyntomodulin GLP-1 is further N-terminally truncated by posttranslational processing in the intestinal L cells resulting in GLP-1(7-37) GLP-1 (7-36) amide. The C-terminal amidation is neither important for the metabolism of GLP-1 nor for its effects on the endocrine pancreas (By
                                                                                                                                                                                                                                                                          98
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Glucagon-like peptide 2
Cleavage (by PCSK2) (By
Cleavage (by PCSK1) and
similarity).

Cleavage (by PCSK1) (By
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Glucagon-like p
Glucagon-like p
Glucagon-like p
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Oxyntomodulin
Glucagon.
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R -> G (in Ref. 6).
; 362997AB72197EE6 CRC64;
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Glicentin-related
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Pred. No. 1.1e~13;
; Mismatches 0;
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MARI_MalD=1016;

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K02813; AAA41235.1; K02809; AAA41235.1; K02810; AAA41235.1;

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the European Bioinformatics Institute. There are no restrictions on use by non-profit institutions as long as its content is in no modified and this statement is not removed. Usage by and for commen entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).

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maintaining hypergycemic conditions in diabetes.

--- FUNCTION: GLP-1 is a potent stimulator of glucose-dependent insulin release. Play important roles on gastric motility and the suppression of plasma glucagon levels. May be involved in the suppression of satisty and stimulation of glucose disposal in peripheral tissues, independent of the actions of insulin. Have growth-promoting activities on intestinal epithelium. May also regulate the hypothalamic pituitary axis (JPA) via effects on LH, TSH, CRH, oxytocin, and vasopressin secretion. Increases islet mass through stimulation of islet neogenesis and pancreatic beta cell proliferation. Inhibits beta the cell apoptosis.

-- FUNCTION: GLP-2 stimulates intestinal growth and up-regulates villus height in the small intestinal growth and up-regulates villus height in the small intestine, concomitant with increased crypt cell proliferation and decreased enterocyte apoptosis. The gastrolitesthmal tract, from the stomach to the colon is the principal target for GLP-2 action. Plays a key role in nutrient
                                                                                                                                                                                                           This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            - FUNCTION: Oxyntomodulin significantly reduces food intake.
- FUNCTION: Glicentin may modulate gastric acid secretion and the gastro-pyloro-duodenal activity.
- SUBCELLULAR LOCATION: Secreted.
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"Glucagon and regulation of glucose metabolism.";
Am. J. Physiol. 284:E671-E678(2003).
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"The glucagon-like peptides.";
Endocr. Rev. 20:876-913(1999).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glucagon-like peptide
                                                                                                                                                                                                                                                                      specific manner in pancreatic A cells and intestinal L cells. In pancreatic A cells, the major bloactive hormone is glucagon cleaved by PCSK2/PC2. In the intestinal L cells PCSK1/PC1 liberates GLP-1, GLP-2, glicentin and cxyntcomodulin. GLP-1 is further N-terminally truncated by posttranslational processing in the intestinal L cells resulting in GLP-1(7-37) GLP-1 (7-36) amide. The C-terminal amidation is neither important for the metabolism of GLP-1 nor for its effects on the endocrine pancreas.

SIMILARITY: Belongs to the glucagon family.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TISSUE SPECIFICITY: Glucagon is secreted in the A cells of the islets of Langerhans. GLP-1, GLP-2, oxyntomodulin and glicentin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   homeostasis, enhancing nutrient assimilation through enhanced gastrointestinal function, as well as increasing nutrient disposal. Stimulates intestinal glucose transport and decreases mucosal permeability.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INDUCTION: Glucagon release is stimulated by hypoglycemia and inhibited by hyperglycemia, insulii, and somatostatin. GLP-1 at induced in response to nutrient ingestion. GLP-2 are induced in response to nutrient ingestion. PTM: Proglucagon is posttranslationally processed in a tissue-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gastrointestinal tract.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         are secreted from entercendocrine cells throughout the
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Metab. 10:153-156(1999).
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A.

Similarity

86.7%;

Pred. No. 3.7 3; Mismatches

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Indels

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Gaps

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Best Local S
Matches 30
                      FRINTS; PRO0275; GLUCAGON.
SWART; SMO0070; GLUCA; 2.
PROSITE; PRO0260; GLUCAGON; 2.
NON TER
SEQUENCE 124 7
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                                                                                                                                    Busby E.R., Brown G.D., Mommsen T.P.;
submitted (NOV-2003) to the EMBL/GenBank/DDBJ databases.
EMBL; AY485820; AA557656.1; -.
InterPro; IRR000552; Glucagon.
Pfam; PF00123; Hormone_2; 2.
                                                                                                                                                                                                                                                                                                                                                                    Proglucagon (Fragment).
Agkistrodon piscivorus (cottonmouth).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRINTS; PR00275; GLUCAGON.

PROSITE; PS00260; GLUCAGON; 4.

Amidation; Cleavage on pair of basic residues;
                                                                                                                                                                                                                                          SEQUENCE FROM N.A. TISSUE=Intestine;
                                                                                                                                                                                                                                                                                                                           Lepidosauria; Squamata; Scleroglossa;
Viperidae; Crotalinae; Agkistrodon.
                                                                                                                                                                                                                                                                                                                                                                                                                              Q6RYB1;
05-JUL-2004 (TrEMBLrel. 27,
05-JUL-2004 (TrEMBLrel. 27,
05-JUL-2004 (TrEMBLrel. 27,
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InterPro; IPR000532; Glucagon.
InterPro; Hormone_2; 3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL; K02811; AAA41235.1; JOINED.
EMBL; K02812; AAA41235.1; JOINED.
                                                                                                                                                                                                                                                                                                       NCBI_TaxID=8715;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q6RYB1
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Conservative
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Oxyntomodulin.
Glucagon (By similarity).
By similarity.
Glucagon-like peptide 1 (By similarity).
Glucagon-like peptide 1(7-37) (By similarity).
Glucagon-like peptide 1(7-36) (By similarity).
Glucagon-like peptide 2 (By similarity).
Glucagon-like peptide 2 (By similarity).
Glucagon-like peptide 2 (By similarity).
Cleavage (by PCSK2) (By similarity).
Cleavage (by PCSK1) (By similarity).
                                                                                                                                                                                                                                                                                                                                                                                                                                Created)
Last sequence up
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Pred. No. 1.1e-13;
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                                      80513A2D6DB5EC91 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
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rine amide (G-128 provides amide
c) (By similarity).
331409D03C7978 CRC64;
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GLUC_CHICK
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( P01277; Q91410;

( P012777; Q91410;

( P0127777; Q91410;

( P012777; Q914
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Best Local
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25-MAR-2004
25-MAR-2004
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"Molecular evolution of proglucagon in non-mammalian vertebrates.";
Submitted (NOV-2003) to the EMBL/GenBank/DDBJ databases.

EMBL; AY485820; AAS57656.1; -...
SPECIES-Chicken; TISSUE-Intestinal mucosa; MEDLINE-95395739; PubMed-7776976; Irwin D.M., Wong J.; Merrian D.M., Wong J.; Merrian and chicken proglucagon: alternative transcripts encoding glucagon-like peptide 2 Mol. Endocrinol. 9:267-277(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A. (ISOFORM PANCREATIC).
SPECIES=Chicken; TISSUB-Pancreas;
MEDLINE=90249492; PubMed=2338135;
Hassgawa S., Terazono K., Nata K., Takada T., Yamamoto H., Okamoto H.;
"Nucleotide sequence determination of chicken glucagon precursor cDNA.
Chicken preproglucagon does not contain glucagon-like peptide II.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Proglucagon (Fragment).
Agkistrodon piscivorus (cottonmouth).
Bukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleost
Lepidosauria, Squamata, Scieroglossa, Serpentes, Colubroidea,
Viperidae, Crotalinae, Agkistrodon.
                                                                                                                                                                                                                                                                                                                                                                                                 FEBS
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Pred. No. 3
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1.7e-12;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Phasianinae;
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splicing 2.";

generates

THE SERVICE OF THE PROPERTY OF REF: SPECIES-M. GAllopavo;
REF: SPECIES-M. GAllopavo;
REF: MEDLINE-73074118; PubMed=4645932; Horm. Metab. Res. 4:360-363(1972). Markussen J., Frandsen E.K., Heding L.G., Sundby F.; "Turkey glucagon: crystallization, amino acid composition and Huang J., Eng J., Yalow R.S.; "Chicken glucagon: sequence and potency in receptor assay."; Horm. Metab. Res. 19:542-544(1987). Pollock H.G., Kimmel J.R.; "Chicken glucagon. Isolation and amino acid sequence studies."; J. Blol. Chem. 250:9377-9380(1975). PubMed=2828209; SPECIES=Chicken; SEQUENCE OF 55-83. MEDLINE=76069271; PubMed=1194290; SPECIES=Chicken; SEQUENCE OF 55-83. Name=Pancreatic; Name=Intestinal; Event=Alternative splicing; Named isoforms=2; IsoId=P01277-1; Sequence=Displayed; increased

Isoid=P01277-2; Sequence=VSP_001753, VSP_001754;

Note=Has been shown to exist only in chicken so far;

Note=Has been shown to exist only in chicken so far;

CC | INDUCTION: Produced in the A cells of the islets of Langerhans in response to a drop in blood sugar concentration.

CC | FTM: Proglucagon is posttranslationally processed in a tissue-specific manner in pancreatic A cells and intestinal L cells. In pancreatic A cells, the major bloactive hormone is glucagon cleaved by PCSK2/PC2. In the intestinal L cells PCSK1/PC1 liberates GLP-1 and GLP-2. GLP-1 is further N-terminally truncated by posttranslational processing in the intestinal L cells resulting in GLP-1(7-37) GLP-1-(7-36) amide (By similarity).

Resulting in GLP-1(7-37) GLP-1-(7-36) amide (By similarity).

CC | INDUCTION: Belongs to the glucagon family. the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch). This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -

EMBL; Y07539; CAA68827.1; -... EMBL; S78477; AAB34506.1; -... EMR; I51301; I51301. ELR; S0992; GCCH. EMBSP; P01274; IGCN.

InterPro; IPR000532; Glucagon.

#Bham; PP00123; Hormone 2; 3.

#BHAM; PR00123; GLUCAGON.

#BPROXITE; PR00275; GLUCAGON.

#PROXITE; PR00260; GLUCAGON; 4.

#PITCH PROXITE; PR00260; GLUCAGON; 4.

#PITCH PROXITE; PR00260; GLUCAGON; Glucagon family; Hormone; Signal.

similarity).

Glicentin-related polypeptide (By

₽ ******************* Matches Query Match Best SITE SITE SITE PROPEP PEPTIDE SEQUENCE VARSPLIC VARSPLIC SITE PROPEP PROPEP PEPTIDE MOD_RES PEPTIDE PEPTIDE PEPTIDE Local 118 HAEGTYTSDITSYLEGQAAKEFIAWLVNGR 147 26; 1 HAEGTFTSDVSSYLEGQAAKEFIAWLVKGR 30 Similarity 206 AA; Conservative 152 111 117 150 165 151 166 199 54 86 112 118 118 23875 MW; 147 92.3%; By similarity.
Cleavage (by PCSK2) (By similarity).
Cleavage (by PCSK1 and PCSK2) (By
similarity).
Cleavage (by PCSK1) (By similarity).
Cleavage (by PCSK1) (By similarity).
Cleavage (by PCSK1) (By similarity).
Cleavage (by PCSK1) (By similarity). ω --Score 143; DB 1; Pred. No. 6.1e-12; /FTId=VSP_001753.
Missing (in isoform Pancreatic).
/FTId=VSP_001754. group) similarity). Glucagon-like peptide 1(7-36) (By By similarity.
Glucagon-like peptide 1 (By similarity).
Glucagon-like peptide 1(7-37) (By By similarity.
Glucagon-like peptide 2 (By similarity). similarity) Arginine Glucagon AB299E1B02FC6AA4 CRC64; Mismatches nine amide (G-148 provides amide p) (By similarity). E (in isoform Pancreatic). Length 206; 0; Gaps

Search completed: December 20, 2004, 08:58:05